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# LTR LAKEWIDE SOCIO-ECONOMIC SURVEY, 1997: TANZANIA

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(Edited by: J.E. Reynolds)

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## PREFACE

The Research for the Management of the Fisheries on Lake Tanganyika project (LTR) 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 Program for the United Nations Development Organization (AGFUND).

LTR's objective is 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, Democratic Republic of Congo, Tanzania, and Zambia).

Particular attention is 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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# LTR LAKEWIDE SOCIO-ECONOMIC SURVEY, 1997: TANZANIA

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***(Edited by: J.E. Reynolds)***

## INTRODUCTION

This document has been prepared as a preliminary report on the 1997 LTR Socio-Economic (SEC) Survey of the Tanzanian 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 Tanzania's Lake Tanganyika artisanal fishery in Kigoma Region conducted under the auspices of the UNDP/FAO Regional Project for Inland Fisheries Planning (IFIP) in 1991 (Leendertse and Horemans, 1991). 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 -- TD70) 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.

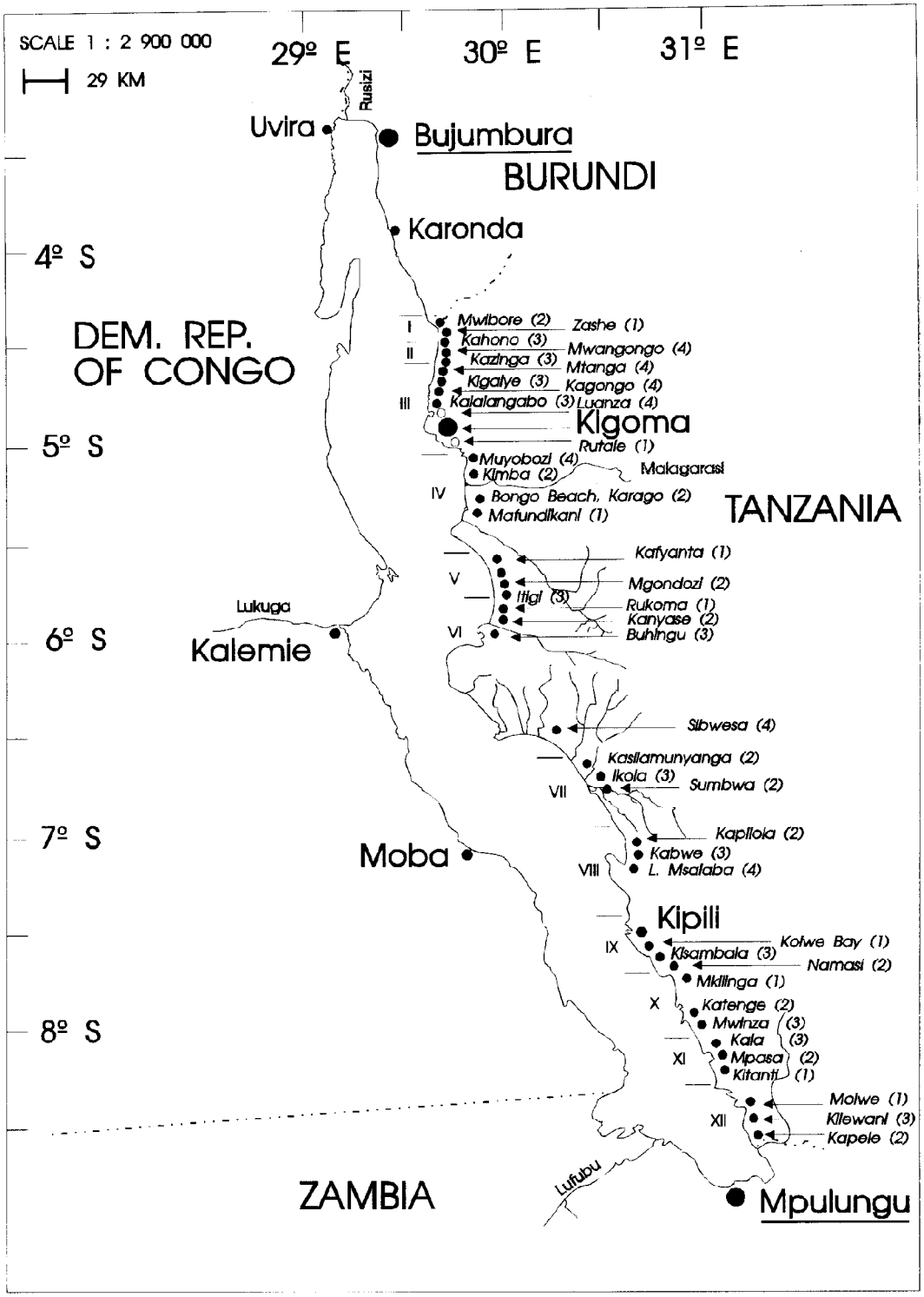



**Fig. 1.1 Lake Tanganyika, East Shore.** Map showing Tanzania Areas I -VI in Kigoma Region and Areas VII - XII in Rukwa Region. Class codes for sites chosen for SEC survey in July 1997 appear in parentheses behind the village names.

## 1. SURVEY BACKGROUND, PREPARATIONS, AND FIELDWORK

The Tanzanian portion of the LTR SEC survey was conducted over a two and a half week period starting on 1 July 1997. The field team consisted of five officers from the TAFIRI/Kigoma station (Messrs. D. Chitamwembwa, I. Katonda, A. Kalangali, S. Muhoza, and E. Kadula), two DoF officers (Ms. F. Sobo -- DoF/Dar es Salaam, and Mr. L. Nonde -- DoF/Kigoma), and two LTR/Kigoma staff (E. Bosma and P. Verburg). LTR's *R/V Tanganyika Explorer* was used throughout mission to transport the team from village to village. Survey visits commenced with the southernmost sample villages along the Rukwa shoreline close to the Zambian border, and worked back north through the sample villages in Kigoma Region to the border with Burundi (see map, Fig. 1.1).

Responsibility for data collection work with the three survey forms was divided up between the team supervisors. Chitamwembwa looked after village background information (Form 1), using as principal contacts village heads and, at the larger beaches, local fisheries officers. Katonda and Sobo respectively supervised the fisher (Form 2) and processor/trader (Form 3) interview teams.

A total of 41 sample survey sites (22 in Kigoma Region, 18 in Rukwa Region) were chosen in advance through a process of stratified random selection (Reynolds and Paffen 1997b), and a total of 40 were actually visited by the field team. In Area 7 of Rukwa, rough lake conditions prevented *Explorer* from anchoring near the designated site of Karema (Class 4), so it was not possible for the team to conduct work there. In Areas 2 and 3 of Kigoma Region, substitute sites were chosen for all four of the pre-selected sites in Area 2, and for one pre-selected site in Area 3. The team exercised this option when it discovered that the pre-selected sites, which are all fishing camps that lie within or border on the Gombe Stream Reserve, were not in use at the time of visit. A full moon (i.e. non-light fishing) period was in progress and almost all local fishers had dispersed to their home villages. Most of these latter lie further to the south in Area 3, from which three of the four substitute sample sites for Area 2 were actually drawn.

Survey fieldwork was completed on 18 July 1997. Table 1.1 summarises the villages visited and the number of respondents interviewed. The field team conducted 652 interviews at 40 different sample sites -- 18 sites in Rukwa Region and 22 in Kigoma Region. Preliminary data coding and entry work was carried out aboard *Explorer* as the questionnaire forms were completed and filed by the survey team.

## 2. LOCAL FISHING VILLAGE/LANDING SITES: BASIC FEATURES

### 2.1 Population and Settlement

Survey village population data for Kigoma and Rukwa Regions are arrayed in Table 2.1. Sites are listed in ascending order by total 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). In some cases official registers were available for reference, but in general the population figures should be regarded as indicative only. Estimated total populations for the 21 village

sites surveyed in Kigoma Region range from a low of 43 inhabitants at Kafyanta (Area 5 -- see map, Figure 1.1) to a high of 9,859 inhabitants at Mfundikani (Area 4). For Rukwa Region, estimated populations range from 71 at Kolwe Bay (Area 9) up to 6,267 at Kabwe (Area 8). The gender structure of village populations, calculated as a percentage of total adult population reported, indicates a slight to marked majority of women at most Kigoma Region sites (13 of 20 cases reporting), whereas for Rukwa Region the situation seems more evenly balanced between sites with female majorities (8 of 18) and those with male majorities (6 of 18). The latter situation usually prevails at fishing camps, where children and women are either absent or present in low numbers.

Sixteen of the 20 Kigoma Region sites for which data are recorded register an increase in overall population size compared with the situation five years ago (Table 2.2). Growth was attributed mostly to 'natural population increase' (cited in all cases of reported growth), with 'in-migration' reported as an additional contributing factor (cited in 75% of cases reporting growth). 'Refugee influx' figured to some extent as well, for about a third of the cases reporting growth. 'Security problems' were cited as reasons for a decrease in numbers of inhabitants in two of the four cases reporting this trend. The other two cases of decline were attributed to 'out-migration' to other villages.

In Rukwa Region, increases of population over the past five years were reported for all 18 sample sites. Reasons cited were 'natural population increase' (about 80% of cases) and 'in-migration' (about 75% of cases).

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

| Start Date | Site Name | Area | Class | Form 1 (Village) | Form 2 (Fishers) Artisanal | | | Traditional | | | Form 3 (Post-harvest) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Owner | Crew | Tot. | Owner | Crew | Tot. | Fem. | Male | Tot |
| **RUKWA REGION** | | | | | | | | | | | | | |
| 02.07.97 | **Kapele** | 12 | II | 1 | 1 | 2 | 3 | 2 | 2 | 4 | 0 | 3 | 3 |
| 03.07.97 | **Kilewani** | 12 | III | 1 | 1 | 5 | 6 | 4 | 1 | 5 | 0 | 4 | 4 |
| 03.07.97 | **Molwe** | 12 | I | 1 | 0 | 5 | 5 | 0 | 0 | 0 | 1 | 0 | 1 |
| 03.07.97 | **Katanti** | 11 | I | 1 | 1 | 3 | 4 | 2 | 0 | 2 | 0 | 0 | 0 |
| 04.07.97 | **Mpasa** | 11 | III | 1 | 0 | 4 | 4 | 0 | 2 | 2 | 2 | 1 | 3 |
| 04.07.97 | **Kala** | 11 | II | 1 | 4 | 2 | 6 | 1 | 2 | 3 | 0 | 3 | 3 |
| 04.07.97 | **Mwinza** | 10 | III | 1 | 2 | 6 | 8 | 2 | 0 | 2 | 4 | 1 | 5 |
| 05.07.97 | **Katenge** | 10 | II | 1 | 1 | 7 | 8 | 3 | 0 | 3 | 0 | 5 | 5 |
| 05.07.97 | **Mkilinga** | 10 | I | 1 | 1 | 5 | 6 | 1 | 0 | 1 | 1 | 3 | 4 |
| 06.07.97 | **Kisambala** | 9 | II | 1 | 3 | 5 | 8 | 2 | 0 | 2 | 0 | 5 | 5 |
| 06.07.97 | **Namansi** | 9 | III | 1 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 1 |
| 06.07.97 | **Kolwe bay** | 9 | I | 1 | 1 | 3 | 4 | 1 | 0 | 1 | 1 | 1 | 2 |
| 06.07.97 | **L. Msalaba** | 8 | IV | 1 | 4 | 2 | 6 | 0 | 0 | 0 | 0 | 2 | 2 |
| 06.07.97 | **Kambwe** | 8 | III | 1 | 3 | 18 | 21 | 3 | 4 | 7 | 7 | 3 | 10 |
| 07.07.97 | **Kapilola** | 8 | II | 1 | 4 | 3 | 7 | 1 | 3 | 4 | 0 | 2 | 2 |
| 08.07.97 | **Sumbwa** | 7 | III | 1 | 5 | 8 | 13 | 1 | 1 | 2 | 2 | 1 | 3 |
| 08.07.97 | **Ikola** | 7 | III | 1 | 0 | 7 | 7 | 2 | 1 | 3 | 0 | 4 | 4 |
| 08.07.97 | **Kasilamunyanga** | 7 | II | 1 | 2 | 10 | 12 | 1 | 1 | 2 | 0 | 1 | 1 |
| | **TOTALS** | | | **18** | **34** | **97** | **131** | **26** | **17** | **43** | **18** | **40** | **58** |
| **KIGOMA REGION** | | | | | | | | | | | | | |
| 08.07.97 | **Sibwesa** | 6 | IV | 1 | 2 | 13 | 15 | 3 | 2 | 5 | 0 | 6 | 6 |
| 09.07.97 | **Buhingu** | 6 | III | 1 | 2 | 6 | 8 | 1 | 2 | 3 | 0 | 3 | 3 |
| 09.07.97 | **Kanyase** | 6 | II | 1 | 5 | 8 | 13 | 2 | 0 | 2 | 4 | 3 | 7 |
| 09.07.97 | **Rukoma** | 6 | I | 1 | 1 | 2 | 3 | 2 | 1 | 3 | 0 | 1 | 1 |
| 10.07.97 | **Itigi** | 5 | III | 1 | 0 | 9 | 9 | 1 | 1 | 2 | 6 | 1 | 7 |
| 10.07.97 | **Mgondozi** | 5 | II | 1 | 1 | 27 | 28 | 8 | 5 | 13 | 7 | 9 | 16 |
| 11.07.97 | **Kafyanta** | 5 | I | 1 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 2 |
| 11.07.97 | **Mafundikani** | 4 | I | 1 | 3 | 4 | 7 | 0 | 0 | 0 | 3 | 0 | 3 |
| 12.07.97 | **Karago** | 4 | II | 1 | 7 | 7 | 14 | 4 | 0 | 4 | 1 | 6 | 7 |
| 12.07.97 | **Kimba** | 4 | II | 1 | 0 | 19 | 19 | 5 | 3 | 8 | 6 | 5 | 11 |
| 13.07.97 | **Muyobozi** | 4 | IV | 1 | 4 | 25 | 29 | 4 | 2 | 6 | 8 | 7 | 15 |
| 15.07.97 | **Rutale*** | 3 | I | 1 | 1 | 3 | 4 | 1 | 0 | 1 | 0 | 0 | 0 |
| 15.07.97 | **Luanza**** | 3 | IV | 0 | 3 | 26 | 29 | 0 | 0 | 0 | 5 | 8 | 13 |
| 16.07.97 | **Mwibore** | 1 | II | 1 | 1 | 6 | 7 | 0 | 1 | 1 | 0 | 3 | 3 |
| 16.07.97 | **Zashe** | 1 | I | 1 | 1 | 0 | 1 | 2 | 0 | 2 | 0 | 1 | 1 |
| 16.07.97 | **Kahono** | 1 | III | 1 | 2 | 1 | 3 | 1 | 1 | 2 | 0 | 3 | 3 |
| 17.07.97 | **Mwamgongo** | 2 | IV | 1 | 4 | 5 | 9 | 0 | 1 | 1 | 1 | 3 | 4 |
| 17.07.97 | **Kazinga** | 3 | III | 1 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 1 |
| 17.07.97 | **Mtanga** | 3 | IV | 1 | 4 | 5 | 9 | 1 | 0 | 1 | 0 | 3 | 3 |
| 18.07.97 | **Kagongo** | 3 | IV | 1 | 2 | 3 | 5 | 8 | 2 | 10 | 6 | 1 | 7 |
| 18.07.97 | **Kigalye** | 3 | III | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 1 | 0 | 1 |
| 18.07.97 | **Kalalangabo** | 3 | III | 1 | 0 | 0 | 0 | 12 | 3 | 15 | 0 | 5 | 5 |
| | **TOTALS** | | | **21** | **45** | **175** | **220** | **55** | **26** | **81** | **48** | **71** | **119** |

* No Form 1 data are reported for Rutale in the following tables due to coding problems.

****** Form 1 was not completed for Luanza (Area 3, Class 4) because it is the main landing beach for Kigoma Town, a large urban area with features that cannot be readily enumerated by a small survey team.

**Table 2.1 Estimated population figures, Tanzania survey sites.***

| Site name | Area No. | Class (1-4) | Tot. Pop. | Tot. Male | % Male (Ad. Pop) | Tot. Fem | % Fem (Ad. Pop) | Tot. Chdr | % Chdr (Tot.Pop) | Tot. HH | Avg. HH Size |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A. KIGOMA** | | | | | | | | | | | |
| 1) Kafyanta | 5 | 1 | 43 | 42 | 0.98 | 1 | 0.02 | 0 | 0.00 | 10 | 4.3 |
| 2) Kazinga | 2 | 1 | 638 | 130 | 0.43 | 171 | 0.57 | 337 | 0.53 | 183 | 3.5 |
| 3) Kigalye | 3 | 2 | 750 | 110 | 0.42 | 149 | 0.58 | 490 | 0.65 | 103 | 7.3 |
| 4) Muyobozi | 4 | 4 | 950 | 441 | 0.67 | 216 | 0.33 | 293 | 0.31 | 309 | 3.1 |
| 5) Mwibore | 1 | 2 | 1100 | 233 | 0.48 | 249 | 0.52 | 618 | 0.56 | 163 | 6.7 |
| 6) Kagongo | 2 | 3 | 1200 | 133 | 0.35 | 248 | 0.65 | 819 | 0.68 | 145 | 8.3 |
| 7) Kalalangabo | 3 | 3 | 1750 | 225 | 0.38 | 364 | 0.62 | 1161 | 0.66 | 243 | 7.2 |
| 8) Kahono | 1 | 3 | 1761 | 417 | 0.50 | 417 | 0.50 | 927 | 0.53 | 180 | 9.8 |
| 9) Mgondozi | 5 | 2 | 2235 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | 315 | 7.1 |
| 10)Itigi | 5 | 3 | 2400 | 956 | 0.63 | 556 | 0.37 | 888 | 0.37 | 620 | 3.9 |
| 11)Sibwesa | 6 | 4 | 2639 | 705 | 0.50 | 717 | 0.50 | 1216 | 0.46 | 511 | 5.2 |
| 12)Buhingu | 6 | 3 | 4208 | 928 | 0.47 | 1045 | 0.53 | 2235 | 0.53 | 866 | 4.9 |
| 13)Kanyase | 6 | 2 | 4540 | 978 | 0.46 | 1154 | 0.54 | 2408 | 0.53 | | |
| 14)Karogo | 4 | 3 | 4667 | 818 | 0.43 | 1081 | 0.57 | 2768 | 0.59 | 675 | 6.9 |
| 15)Rukoma | 6 | 1 | 4907 | 814 | 0.42 | 1142 | 0.58 | 2951 | 0.60 | 900 | 5.5 |
| 16)Mwangongo | 2 | 2 | 6737 | 1492 | 0.44 | 1912 | 0.56 | 3333 | 0.49 | 822 | 8.2 |
| 17)Kimba | 4 | 2 | 7405 | 1405 | 0.42 | 1946 | 0.58 | 4054 | 0.55 | 702 | 10.5 |
| 18)Mtanga | 2 | 4 | 8209 | 1452 | 0.43 | 1926 | 0.57 | 4831 | 0.59 | 1529 | 5.4 |
| 19)Zashe | 1 | 1 | 8900 | 2243 | 0.49 | 2354 | 0.51 | 4303 | 0.48 | 1354 | 6.6 |
| 20)Mfundikani | 4 | 1 | 9859 | 2012 | 0.44 | 2545 | 0.56 | 5302 | 0.54 | 1359 | 7.3 |
| 21)Luanza | 3 | 4 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | -- | -- |
| **B. RUKWA** | | | | | | | | | | | |
| 1) Kolwe Bay | 9 | 1 | 71 | 26 | 0.62 | 16 | 0.38 | 29 | 0.41 | 19 | 3.7 |
| 2) Katanti | 11 | 1 | 124 | 32 | 0.56 | 25 | 0.44 | 67 | 0.54 | 31 | 4.0 |
| 3) Molwe | 12 | 1 | 130 | 30 | 0.46 | 35 | 0.54 | 65 | 0.50 | 32 | 4.1 |
| 4) Mkilinga | 10 | 1 | 190 | 85 | 0.62 | 52 | 0.38 | 53 | 0.28 | 41 | 4.6 |
| 5) Kapilola | 8 | 2 | 236 | 48 | 0.51 | 47 | 0.49 | 141 | 0.60 | 44 | 5.4 |
| 6) Katenge | 10 | 2 | 322 | 82 | 0.45 | 100 | 0.55 | 140 | 0.43 | 77 | 4.2 |
| 7) Sumbwa | 7 | 2 | 327 | 203 | 0.83 | 42 | 0.17 | 82 | 0.25 | 60 | 5.5 |
| 8) L. Msalaba | 8 | 4 | 345 | 120 | 0.56 | 93 | 0.44 | 132 | 0.38 | 82 | 4.2 |
| 9) Kapele | 12 | 2 | 377 | 89 | 0.46 | 103 | 0.54 | 185 | 0.49 | 95 | 4.0 |
| 10)Mwinza | 10 | 3 | 801 | 177 | 0.47 | 200 | 0.53 | 424 | 0.53 | 168 | 4.8 |
| 11)Kasilamunyanga | 7 | 2 | 835 | 232 | 0.52 | 218 | 0.48 | 385 | 0.46 | 235 | 3.6 |
| 12)Kisambala | 9 | 2 | 900 | 178 | 0.51 | 174 | 0.49 | 548 | 0.61 | 125 | 7.2 |
| 13)Kala | 11 | 2 | 1177 | 272 | 0.47 | 304 | 0.53 | 601 | 0.51 | 305 | 3.9 |
| 14)Kilewani | 12 | 3 | 1332 | 242 | 0.42 | 335 | 0.58 | 629 | 0.47 | 254 | 5.2 |
| 15)Mpasa | 11 | 3 | 1461 | 300 | 0.48 | 324 | 0.52 | 837 | 0.57 | 300 | 4.9 |
| 16)Namasi | 9 | 3 | 1776 | 375 | 0.48 | 406 | 0.52 | 995 | 0.56 | 144 | 12.3 |
| 17)Ikola | 7 | 3 | 3181 | 668 | 0.50 | 679 | 0.50 | 1635 | 0.51 | 721 | 4.4 |
| 18)Kabwe | 8 | 3 | 6267 | 1501 | 0.49 | 1563 | 0.51 | 3198 | 0.51 | 1500 | 4.2 |

* Listed in ascending order of estimated population size. ND = 'No data.'

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

| Site name | Area No. | Class (1-4) | Tot.Pop. (Est.) | Growth from 5 yrs ago | Reason(1) | Reason(2) [If cited] | Reason(3) [If cited] |
|---|---|---|---|---|---|---|---|
| **A. KIGOMA** | | | | | | | |
| 1) Kafyanta | 5 | 1 | 43 | Less | 'Security problems' | | |
| 2) Kazinga | 2 | 1 | 638 | More | Natural pop. increase (birth) | In-migration | |
| 3) Kigalye | 3 | 2 | 750 | More | Natural pop. increase (birth) | In-migration | |
| 4) Muyobozi | 4 | 4 | 950 | More | Natural pop. increase (birth) | In-migration | |
| 5) Mwibore | 1 | 2 | 1100 | More | Natural pop. increase (birth) | 'Refugee influx' | |
| 6) Kagongo | 2 | 3 | 1200 | More | Natural pop. increase (birth) | In-migration | |
| 7) Kalalangabo | 3 | 3 | 1750 | More | Natural pop. increase (birth) | In-migration | |
| 8) Kahono | 1 | 3 | 1761 | More | Natural pop. increase (birth) | In-migration | 'Refugee influx' |
| 9) Mgondozi | 5 | 2 | 2235 | Less | 'Security problems' | | |
| 10) Itigi | 5 | 3 | 2400 | More | In-migration | 'Refugee influx' | Natural pop. increase (birth) |
| 11) Sibwesa | 6 | 4 | 2639 | Less | Out-migration | | |
| 12) Buhingu | 6 | 3 | 4208 | More | Natural pop. increase (birth) | 'Refugee influx' | |
| 13) Kanyase | 6 | 2 | 4540 | Less | Out-migration | | |
| 14) Karogo | 4 | 3 | 4667 | More | Natural pop. increase (birth) | 'Refugee influx' | |
| 15) Rukoma | 6 | 1 | 4907 | More | In-migration | Natural pop. increase (birth) | |
| 16) Mwangongo | 2 | 2 | 6737 | More | Natural pop. increase (birth) | In-migration | |
| 17) Kimba | 4 | 2 | 7405 | More | Natural pop. increase (birth) | In-migration | |
| 18) Mtanga | 2 | 4 | 8209 | More | Natural pop. increase (birth) | In-migration | |
| 19) Zashe | 1 | 1 | 8900 | More | Natural pop. increase (birth) | In-migration | 'Refugee influx' |
| 20) Mfundikani | 4 | 1 | 9859 | More | Natural pop. increase (birth) | | |
| 21) Luanza | 3 | 4 | N.D. | N.D. | N.D. | | |

**Table 2.2 (Cont.)** *

| Site name | Area No. | Class (1-4) | Tot.Pop. (Est.) | Growth from 5 yrs ago | Reason(1) | Reason(2) [If cited] | Reason(3) [If cited] |
|---|---|---|---|---|---|---|---|
| **B. RUKWA** | | | | | | | |
| 1) Kolwe Bay | 9 | 1 | 71 | More | In-migration | 'Fishing' | |
| 2) Katanti | 11 | 1 | 124 | More | Natural pop. increase (birth) | In-migration | |
| 3) Molwe | 12 | 1 | 130 | More | Natural pop. increase (birth) | In-migration | |
| 4) Mkilinga | 10 | 1 | 190 | More | In-migration | | |
| 5) Kapilola | 8 | 2 | 236 | More | In-migration | Natural pop. increase (birth) | |
| 6) Katenge | 10 | 2 | 322 | More | Natural pop. increase (birth) | | |
| 7) Sumbwa | 7 | 2 | 327 | More | In-migration | Natural pop. increase (birth) | |
| 8) L. Msalaba | 8 | 4 | 345 | More | In-migration | Natural pop. increase (birth) | |
| 9) Kapele | 12 | 2 | 377 | More | 'Fishing' | | |
| 10) Mwinza | 10 | 3 | 801 | More | Natural pop. increase (birth) | | |
| 11) Kasilamunyanga | 7 | 2 | 835 | More | In-migration | Natural pop. increase (birth) | |
| 12) Kisambala | 9 | 2 | 900 | More | Natural pop. increase (birth) | In-migration | |
| 13) Kala | 11 | 2 | 1177 | More | Natural pop. increase (birth) | | |
| 14) Kilewani | 12 | 3 | 1332 | More | Natural pop. increase (birth) | In-migration | 'Fishing' |
| 15) Mpasa | 11 | 3 | 1461 | More | Natural pop. increase (birth) | | In-migration |
| 16) Namasi | 9 | 3 | 1776 | More | Natural pop. increase (birth) | In-migration | |
| 17) Ikola | 7 | 3 | 3181 | More | In-migration | Natural pop. increase (birth) | |
| 18) Kabwe | 8 | 3 | 6267 | More | Natural pop. increase (birth) | In-migration | |

* Listed in ascending order of estimated population size.

## 2.2 Access and Transportation Links

Data on sample landing site access to the national road network are displayed in Table 2.3. Access to outside markets is mostly restricted to water transport. Large transport canoes or 'water taxis' are the most frequent providers of lake cargo and passenger service, though many of the bigger settlements have steamer/cargo ship connections with Kigoma, Tanzania's principal port and

population centre on Lake Tanganyika and also the terminus of the Central Railway line with links to the hinterland and Dar es Salaam. Rukwa Region village residents depend on larger settlements like Kipili for simple provisions and merchandise. But it is Kigoma and to some extent the inland towns of Mpanda and Sumbawanga, with their overland links to the rest of the country, that offer fuller inventories of supplies and services.

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

| Site name | Site No. | Area No. | Class | Tot. Pop. | Households | Avg. HH Size | 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 | Tel./ Radio call | Post office | Bank | Fisheries staff | Fish committee | Nearest Basic Service/ Supply Centre (kms) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KIGOMA** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kafyanta | 26 | 5 | 1 | 43 | 10 | 4.3 | 25 | N.D. | N.D. | | Steamer | 0 | 0 | 0 | 0 | 0 | Lake | | No | 0 | | | No | No | No | No | No | >60 |
| Kazinga | 37 | 2 | 1 | 638 | 183 | 3.5 | 546 | None/ Path | No | Yes | Water taxi | 3 | 2 | 1 | 0 | 4 | Piped | No | No | 0 | 0 | No | No | No | No | Yes | No | >25 |
| Kigalye | 34 | 3 | 2 | 750 | 103 | 7.3 | 272 | None/ Path | No | Yes | Water taxi | 4 | 0 | 1 | 0 | 4 | Piped | No | No | 1 | 0 | No | No | No | No | Yes | No | >20 |
| Muyobozi | 30 | 4 | 4 | 950 | 309 | 3.1 | 320 | Dirt track | Yes | Yes | Water taxi | >50 | 5 | 13 | 3 | 3 | Lake | No | Yes | 1 | 0 | No | No | No | No | Yes | Yes | >20 |
| Mwibore | 41 | 1 | 2 | 1100 | 163 | 6.7 | 476 | None/ Path | No | Yes | Water taxi | 24 | 2 | 3 | 0 | 5 | Lake | No | No | 1 | 0 | No | No | No | No | Yes | No | >60 |
| Kagongo | 35 | 2 | 3 | 1200 | 145 | ?? | 410 | None/ Path | No | Yes | Steamer | 10 | 0 | 2 | 0 | 4 | Piped | | No | 0 | 0 | No | No | No | No | Yes | No | >10 |
| Kalalangabo | 33 | 3 | 3 | 1750 | 243 | 7.2 | 666 | None/ Path | No | Yes | Water taxi | 3 | 0 | 0 | 0 | 0 | Lake | No | No | 1 | 0 | No | No | No | No | No | No | >10 |
| Kahono | 39 | 1 | 3 | 1761 | 180 | ?? | 537 | None/ Path | No | Yes | Water taxi | 7 | 2 | 2 | 1 | 2 | Piped | No | No | 0 | 0 | No | No | Yes | No | Yes | Yes | >50 |
| Mgondozi | 25 | 5 | 2 | 2235 | 315 | 7.1 | | N.D. | | | Steamer | 5 | 13 | 2 | 0 | 4 | Stream | No | Yes | 1 | 0 | No | No | No | No | No | No | >80 |
| Itigi | 24 | 5 | 3 | 2400 | 620 | 3.9 | 1529 | N.D. | | | Steamer | 5 | 16 | 10 | 0 | 5 | Stream | No | Yes | 1 | 0 | No | No | No | No | | Yes | >100 |
| Sibwesa | 20 | 6 | 4 | 2639 | 511 | 5.2 | 1418 | N.D. | No | Yes | Steamer | 6 | 9 | 4 | 0 | 6 | Well | No | Yes | 1 | 0 | No | No | No | No | Yes | No | >200 |
| Buhingu | 21 | 6 | 3 | 4208 | 866 | 4.9 | 2108 | N.D. | No | Yes | Steamer | 11 | 15 | 4 | 0 | 7 | Stream | No | Yes | 1 | 0 | | Yes | Yes | No | Yes | No | >100 |
| Kanyase | 22 | 6 | 2 | 4540 | | | | N.D. | | | Steamer | 16 | 14 | 7 | 0 | 6 | Stream | No | Yes | 1 | 0 | No | No | No | No | No | No | >100 |

*Listed in ascending order of population size. N.D. = No data.
?? = Questionable data.

## 2.3 Basic Facilities Inventory

The inventory of key facilities and services run by the survey teams at all sites, also shown in Table 2.3, reveals sharp differences between Kigoma and Rukwa regions. Market vendors, shops or kiosks, and bars or restaurants are found in fair numbers throughout the Kigoma Region sites, but are of low to scarce occurrence at most Rukwa sites. Only one site in Rukwa has a fuel supplier, compared with 8 sites with a total of 18 fuel suppliers for Kigoma Region. Whereas only two sites in Rukwa have a fisheries office, most Kigoma Region sites have one (15 out of 22). Active local fishing committees are not very common in Kigoma, being noted for only about a third of the cases, but hardly exist at all in the Rukwa Regiona villages. Whereas only two sites in Rukwa have a fisheries office, most Kigoma Region sites have one (15 out of 22). At the same time, it can hardly be said that any of the sites in either region are well endowed with major amenities. There are few cases of protected water supplies, and electricity, telephone/radio call service, post offices, and banks are lacking entirely.[1]

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

## 3.1 Fisher Sample Composition

The sampling strategy for Tanzania called for contact with a population of fishers corresponding with the number of fishers associated with 5% of all active fishing units in Tanzanian waters, based on an estimation of mean number of crew per fishing unit calculated form the results of 1995 Frame Survey (Paffen and Lyimo 1996). Fishing units were to be further distinguised according to estimated proportions of about 40% 'traditional fisheries' units and 60% 'artisanal fisheries' units. The plan called for individual interviews to be conducted at the rate of about 1.5 persons per 'traditional' unit versus 3 persons per 'artisanal' unit (Reynolds and Paffen, 1997b).

A breakdown of the 475 respondents actually interviewed by the team by the main gear operated by their units, as shown in Table 3.1, indicates that a substantial majority in both regions (73% for Kigoma and 75% for Rukwa) are associated with 'artisanal' gear kits, comprised either of standard lift nets, 'Apollo' lift nets, day beach seines, night beach seines, or 'chiromilla' seines, as distinct from 'traditional' kits that consist of either handlines, longlines, gillnets, or lusenga (scoop) nets.[2]

[1] Except in the case of Luanza, Kigoma Town's local landing site.
[2] See Challe and Kihakwe (1994) for a description of common gear types found in the Lake Tanganyika fishery.

**Table 3.1 Sample fishing unit respondents by main gear type, Kigoma and Rukwa Regions, Tanzania.**

| Main gear type | Kigoma fisher respondents per type | | Rukwa fisher respondents per type | |
|---|---|---|---|---|
| | No. | % | No. | % |
| **'Traditional'** | | | | |
| Hand line | 12 | 4.0 | 18 | 10.3 |
| Long line | 2 | 0.7 | 2 | 1.1 |
| Gillnet | 21 | 7.0 | 18 | 10.3 |
| Lusenga net | 46 | 15.3 | 5 | 2.9 |
| **Sub-total** | 81 | 27.0 | 43 | 24.6 |
| **'Artisanal'** | | | | |
| Lift net | 164 | 54.5 | 79 | 45.4 |
| Apollo | 10 | 3.3 | 0 | 0.0 |
| Day beach seine | 46 | 15.3 | 52 | 29.9 |
| Night beach seine | 0 | 0.0 | 0 | 0.0 |
| Chiromilla seine | 0 | 0.0 | 0 | 0.0 |
| **Sub-total** | 220 | 73.1 | 131 | 75.3 |
| **Total cases** | 301 | 100.0 | 174 | 100.0 |

Fishing units may operate with one or more workboats, distinguished according to function. For survey purposes, 'fishing boats' were defined as those which which carry the main gear of fishing units (never more than one boat per unit). As indicated in Tables 3.2a-b, the Tanzania sample units usually operate either with planked canoe or catamaran (doubled-up planked canoes) fishing boats. Dugout canoes are much less common. 'Light boats' -- special craft that carry lamps for night fishing operations -- are of only trace occurrence. Thirty-three of the 301 fishing units sampled in Kigoma Region, and 49 of those sampled in Rukwa Region, operated additional 'auxiliary' craft (almost always planked canoes) to assist with fishing operations.

**Table 3.2a Sample fishing units by craft type, Kigoma Region, Tanzania.***

| Smallcraft type | Fishing boat (Main gear -- 1/ unit) | | Cases of associated boats: Light boat | | Auxiliary boat | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| **Dugout canoe** | 34 | 11.3 | 0 | 0.0 | 3 | 9.1 |
| **Planked canoe** | 93 | 30.9 | 1 | 100.0 | 30 | 90.9 |
| **Catamaran** | 174 | 57.8 | 0 | 0.0 | 0 | 0.0 |
| **Total cases** | 301 | 100.0 | 1 | 100.0 | 33 | 100.0 |

***Avg. No. Boats/ Artisanal unit =** 1.14
***Avg. No. Boats/ Traditional unit =** 1.04

**Table 3.2b Sample fishing units by craft type, Rukwa Region, Tanzania.**

| Smallcraft type | Fishing boat (Main gear -- 1/ unit) | | Cases of associated boats: Light boat | | Auxiliary boat | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Dugout canoe | 10 | 5.7 | 0 | 0.0 | 2 | 4.1 |
| Planked canoe | 81 | 46.6 | 5 | 100.0 | 47 | 95.9 |
| Catamaran | 83 | 47.7 | 0 | 0.0 | 0 | 0.0 |
| Total cases | 174 | 100.0 | 5 | 100.0 | 49 | 100.0 |

| | |
|---|---|
| *Avg. No. Boats/ Artisanal unit = | 1.40 |
| *Avg. No. Boats/ Traditional unit = | 1.02 |

The sample population for Tanzania 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 boat owners/operators — Owners or operators of auxiliary light boats for night fishing operations.

On this basis, Kigoma Region and Rukwa Region sample respondent populations work out as follows:

**Table 3.3a Respondents by fisher category, Kigoma Region, Tanzania.**

| Category | Artisanal | | Traditional | | Combined | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Owner | 15 | 6.8 | 2 | 2.5 | 17 | 5.6 |
| Owner/Operator | 30 | 13.6 | 53 | 65.4 | 83 | 27.6 |
| Operator/Captain | 58 | 26.4 | 6 | 7.4 | 64 | 21.3 |
| Crew/labourers* | 117 | 53.2 | 20 | 24.7 | 137 | 45.5 |
| Total cases | 220 | 100.0 | 81 | 100.0 | 301 | 100.0 |
| Missing cases | 0 | 0 | 0 | 0 | 0 | 0 |

6 Artisanal 2 Traditional

**Table 3.3bRespondents by fisher category, Rukwa Region, Tanzania.**

| Category | Artisanal | | Traditional | | Combined | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Owner | 9 | 6.9 | 1 | 2.3 | 10 | 5.7 |
| Owner/Operator | 25 | 19.1 | 25 | 58.1 | 50 | 28.7 |
| Operator/Captain | 28 | 21.4 | 8 | 18.6 | 36 | 20.7 |
| Crew/labourers* | 69 | 52.7 | 9 | 20.9 | 78 | 44.8 |
| Total cases | 131 | 100.0 | 43 | 100.0 | 174 | 100.0 |
| Missing cases | 0 | -- | 0 | -- | 0 | -- |

* Avg. No. Crew/fishing unit = 6 Artisanal, 3 Traditional

In order to facilitate data presentation in the following sections, these categories have been simplified into four basic respondent types: a) artisanal owners; b) artisanal crew; c) traditional owners; and d) traditional crew.

## 3.2 Fisher Respondent Background Characteristics

### 3.2.1 Gender, age, and formal education

All respondents in the Tanzanian fisher sample are male. Characteristics in terms of age and formal education attained are displayed in Tables 3.4a-b and 3.5a-b respectively. Owners in both the artisanal and traditional fisheries are relatively older than those in the respective crew categories, though the difference in the traditional fishery within Rukwa Region is not so marked. For Kigoma artisanal fishers, just over 20% of owners are less than 30 years old as compared to 60% of crew. Amongst traditional Kigoma fishers, some 47% of owners are less than 30 as compared to about 62% of crew. In Rukwa Region, only about 12% of artisanal owners are under 30 years of age versus around 59% of artisanal crew members. For Rukwa traditionals, the proportions are 50% and 53% for owners and crew respectively.

**Table 3.4a Age structure of sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Age range (Yrs) | Artisanal | | | | Traditional | | | |
|---|---|---|---|---|---|---|---|---|
| | Owner | | Crew | | Owner | | Crew | |
| | % | Cum% | % | Cum% | % | Cum% | % | Cum% |
| <15 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 1.8 | 0.0 | 0.0 |
| 15 - 18 | 2.2 | 2.2 | 7.4 | 7.4 | 1.8 | 3.6 | 15.4 | 15.4 |
| 19 - 21 | 4.4 | 6.7 | 12.0 | 19.4 | 12.7 | 16.4 | 26.9 | 42.3 |
| 22 - 25 | 6.7 | 13.3 | 24.0 | 43.4 | 18.2 | 34.5 | 7.7 | 50.0 |
| 26 - 29 | 8.9 | 22.2 | 16.6 | 60.0 | 12.7 | 47.3 | 11.5 | 61.5 |
| 30 - 39 | 42.2 | 64.4 | 25.7 | 85.7 | 27.3 | 74.5 | 19.2 | 80.8 |
| 40 - 49 | 15.6 | 80.0 | 11.4 | 97.1 | 16.4 | 90.9 | 11.5 | 92.3 |
| 50 - 59 | 15.6 | 95.6 | 2.9 | 100.0 | 7.3 | 98.2 | 3.8 | 96.2 |
| ≥ 60 | 4.4 | 100.0 | 0.0 | 100.0 | 1.8 | 100.0 | 3.8 | 100.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

| | | | | |
|---|---|---|---|---|
| **Total cases** (N - 301) | 45 | 175 | 55 | 26 |
| **Missing cases** | 0 | 0 | 0 | 0 |

**Table 3.4b Age structure of sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Age range (Yrs) | Artisanal | | | | Traditional | | | |
|---|---|---|---|---|---|---|---|---|
| | Owner | | Crew | | Owner | | Crew | |
| | % | Cum% | % | Cum% | % | Cum% | % | Cum% |
| **<15** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **15 - 18** | 0.0 | 0.0 | 3.1 | 3.1 | 7.7 | 7.7 | 11.8 | 11.8 |
| **19 - 21** | 2.9 | 2.9 | 11.3 | 14.4 | 7.7 | 15.4 | 17.6 | 29.4 |
| **22 - 25** | 0.0 | 2.9 | 24.7 | 39.2 | 11.5 | 26.9 | 11.8 | 41.2 |
| **26 - 29** | 8.8 | 11.8 | 19.6 | 58.8 | 23.1 | 50.0 | 11.8 | 52.9 |
| **30 - 39** | 32.4 | 44.1 | 33.0 | 91.8 | 26.9 | 76.9 | 35.3 | 88.2 |
| **40 - 49** | 26.5 | 70.6 | 8.2 | 100.0 | 11.5 | 88.5 | 5.9 | 94.1 |
| **50 - 59** | 17.6 | 88.2 | 0.0 | 100.0 | 7.7 | 96.2 | 5.9 | 100.0 |
| **≥ 60** | 11.8 | 100.0 | 0.0 | 100.0 | 3.8 | 100.0 | 0.0 | 100.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 174) | 34 | | 97 | | 26 | | 17 | |
| **Missing cases** | 0 | | 0 | | 0 | | 0 | |

Distinctions in terms of formal educational attainment between owner and crew categories, measured according to reported possession of school-leaving certificates, are not particularly strong except amongst artisanal Rukwa fishers. Greater proportions of Kigoma artisanal and traditional owners report possession of a primary certificate than their respective crew counterparts, but the difference in both cases amounts to less than 10 percentage points. In Rukwa, artisanal crew lead their owner counterparts in holding a primary school certificate by some 19 percentage points, whereas amongst traditional fishers the owner-crew difference appears negligible.

**Table 3.5a Formal education certificate level of sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Certificate level | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| **None %** | 34.1 | 40.0 | 40.7 | 50.0 |
| **Primary Sch. %** | 65.9 | 60.0 | 59.3 | 50.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 |
| **Tot. cases reporting** (n = 299) | 44 | 175 | 54 | 26 |
| **Missing cases** | 1 | 0 | 1 | 0 |
| **Secondary Sch. %** | 4.5 | 2.9 | 0.0 | 0.0 |
| **Total cases** (n = 299) | 44 | 175 | 54 | 26 |
| **Missing cases** | 1 | 0 | 1 | 0 |

**Table 3.5b Formal education certificate level of sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Certificate level | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| None % | 47.1 | 27.8 | 38.5 | 41.2 |
| Primary Sch. % | 52.9 | 72.2 | 61.5 | 58.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Tot. cases reporting (N = 174 ) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |
| Secondary Sch. % | 5.9 | 3.1 | 3.8 | 0.0 |
| Tot. cases reporting (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

### 3.2.2 Marital Status and Dependents

Data pertaining to respondent marital status and dependents are arrayed in Tables 3.6a-b and 3.7a-b. Incidence of marriage occurs in a solid majority of all cases reported across all catgories, but is moderately to substantially higher amongst owners than crew. The rates at which respondents report bearing responsibility for the support of one or more dependents are also higher to considerably higher for owners as compared to crew in both regions.

**Table 3.6a Marital status of sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Marital status | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner % | Crew % | Owner % | Crew % |
| Not married % | 6.7 | 31.6 | 18.2 | 32.0 |
| Married % | 93.3 | 68.4 | 81.8 | 68.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 299) | 45 | 174 | 55 | 25 |
| Missing cases | 0 | 1 | 0 | 1 |

**Table 3.6b Marital status of sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| | Artisanal | | Traditional | |
|---|---|---|---|---|
| Marital status | Owner % | Crew % | Owner % | Crew % |
| Not married % | 0.0 | 34.0 | 19.2 | 35.3 |
| Married % | 100.0 | 66.0 | 80.8 | 64.7 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table 3.7a Dependents reported by sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| | Artisanal | | Traditional | |
|---|---|---|---|---|
| Any dependents | Owner | Crew | Owner | Crew |
| No % | 4.4 | 29.7 | 12.7 | 38.5 |
| Yes % | 95.6 | 70.3 | 87.3 | 61.5 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table 3.7b Dependents reported by sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| | Artisanal | | Traditional | |
|---|---|---|---|---|
| Any dependents | Owner | Crew | Owner | Crew |
| No % | 8.8 | 19.6 | 11.5 | 29.4 |
| Yes % | 91.2 | 80.4 | 88.5 | 70.6 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

### 3.2.3 Place of birth and reasons for migration

Tables 3.8a and 3.8b indicate that Tanzanian sample fisher respondents tend not to originate from their current landing sites bases, except in the case of artisanal fishery owners in Kigoma Region. Of those respondents born elsewhere, 'return to original family place' (place of parents' birth) is by a wide margin the chief reason cited for migration to sample landing sites (Tables 3.9a and 3.9b).

**Table 3.8a Reported place of birth, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| | Artisanal | | Traditional | |
|---|---|---|---|---|
| **Place of birth** | **Owner** | **Crew** | **Owner** | **Crew** |
| **At site/vicinity %** | 55.6 | 27.4 | 47.3 | 38.5 |
| **Within 50 km %** | 13.3 | 11.4 | 12.7 | 15.4 |
| **Beyond 50 km %** | 31.1 | 61.1 | 40.0 | 46.2 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 |
| **Report cases** (N = 301) | 45 | 175 | 55 | 26 |
| **Missing cases** | 0 | 0 | 0 | 0 |

**Table 3.8bReported place of birth, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| | Artisanal | | Traditional | |
|---|---|---|---|---|
| **Place of birth** | **Owner** | **Crew** | **Owner** | **Crew** |
| **At site/vicinity %** | 11.8 | 25.8 | 34.6 | 41.2 |
| **Within 50 km %** | 23.5 | 15.5 | 19.2 | 11.8 |
| **Beyond 50 km %** | 64.7 | 58.8 | 46.2 | 47.1 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 |
| **Report cases** (N = 174) | 34 | 97 | 26 | 17 |
| **Missing cases** | 0 | 0 | 0 | 0 |

**Table 3.9a Reported reason for migration to site, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Reason for migration | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner % | Crew % | Owner % | Crew % |
| 'Original family place' % | 65.0 | 87.1 | 78.6 | 100.0 |
| 'With family/ relatives' % | 15.0 | 4.0 | 3.6 | 0.0 |
| 'For fishing/ fish trading' % | 5.0 | 1.6 | 10.7 | 0.0 |
| 'For farming' % | 10.0 | 5.6 | 7.1 | 0.0 |
| 'For better conditions' % | 0.0 | 0.0 | 0.0 | 0.0 |
| 'For security reasons/ refugee' % | 5.0 | 1.6 | 0.0 | 0.0 |
| 'Other' % | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 |
| **Report cases 'Not born here'** (n = 192) | 20 | 127 | 29 | 16 |
| **Missing cases** | 0 | 3 | 1 | 0 |

**Table 3.9b Reported reason for migration to site, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Reason for migration | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner % | Crew % | Owner % | Crew % |
| 'Original family place' % | 90.0 | 80.0 | 82.4 | 80.0 |
| 'With family/ relatives' % | 0.0 | 2.9 | 0.0 | 10.0 |
| 'For fishing/ fish trading' % | 0.0 | 7.1 | 11.8 | 0.0 |
| 'For farming' % | 10.0 | 10.0 | 5.9 | 10.0 |
| 'For better conditions' % | 0.0 | 0.0 | 0.0 | 0.0 |
| 'For security reasons/ refugee' % | 0.0 | 0.0 | 0.0 | 0.0 |
| 'Other' % | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 |
| **Report cases 'Not born here'** (n = 129) | 30 | 72 | 17 | 10 |
| **Missing cases** | 0 | 2 | 0 | 0 |

### 3.3 Fishing Enterprise and Income Status

Almost all of the Tanzanian 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 (Tables 3.10a-b). Rates of around 90% or more for full-time employment in fisheries are apparent in all categories, with the exception of Rukwa Region traditional owners, about 30% of whom claim only a 'part-time' involvement in this work.

**Table 3.10a Extent participation in fishing, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Participation | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Full time % | 95.6 | 89.1 | 89.1 | 92.0 |
| Part time % | 4.4 | 10.9 | 10.9 | 8.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases | 45 | 175 | 55 | 25 |
| (N = 300) Missing cases | 0 | 0 | 0 | 1 |

**Table 3.10b Extent participation in fishing, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Participation | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Full time % | 91.2 | 89.7 | 69.2 | 88.2 |
| Part time % | 8.8 | 10.3 | 30.8 | 11.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases | 34 | 97 | 26 | 17 |
| (N = 174) Missing cases | 0 | 0 | 0 | 0 |

The age distribution data reviewed earlier showed artisanal and traditional crew to be rather younger as a group than their respective counterpart owners. Not surprisingly, crew members also tend to have less years' worth of experience in fishing

work than do owners (Tables 3.11a-b). Cumulative proportions of crew with ten or less years' of experience are consistently much higher in both regions and in both types of fisheries, except in the case of traditionals in Kigoma Region. Here the percentage lead of crew with ten years or less experience is less pronounced, though still apparent.

**Table 3.11a Years involvement in fishing, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Year range | Artisanal | | | | Traditional | | | |
|---|---|---|---|---|---|---|---|---|
| | Owner | | Crew | | Owner | | Crew | |
| | % | Cum% | % | Cum% | % | Cum% | % | Cum% |
| **<1** | 0.0 | 0.0 | 4.0 | 4.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **1 - 2** | 4.4 | 4.4 | 11.4 | 15.4 | 7.3 | 7.3 | 15.4 | 15.4 |
| **3 - 5** | 20.0 | 24.4 | 21.7 | 37.1 | 20.0 | 27.3 | 34.6 | 50.0 |
| **6 - 10** | 6.7 | 31.1 | 24.0 | 61.1 | 30.9 | 58.2 | 19.2 | 69.2 |
| **>10** | 68.9 | 100.0 | 38.9 | 100.0 | 41.8 | 100.0 | 30.8 | 100.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** | 45 | | 175 | | 55 | | 26 | |
| (N = 301) | | | | | | | | |
| **Missing cases** | 0 | | 0 | | 0 | | 0 | |

**Table 3.11b Years involvement in fishing, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Year range | Artisanal | | | | Traditional | | | |
|---|---|---|---|---|---|---|---|---|
| | Owner | | Crew | | Owner | | Crew | |
| | % | Cum% | % | Cum% | % | Cum% | % | Cum% |
| **<1** | 0.0 | 0.0 | 3.1 | 3.1 | 4.0 | 4.0 | 0.0 | 0.0 |
| **1 - 2** | 0.0 | 0.0 | 13.5 | 16.7 | 8.0 | 12.0 | 11.8 | 11.8 |
| **3 - 5** | 5.9 | 5.9 | 25.0 | 41.7 | 16.0 | 28.0 | 35.3 | 47.1 |
| **6 - 10** | 20.6 | 26.5 | 24.0 | 65.6 | 12.0 | 40.0 | 29.4 | 76.5 |
| **>10** | 73.5 | 100.0 | 34.4 | 100.0 | 60.0 | 100.0 | 23.5 | 100.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** | 34 | | 96 | | 25 | | 17 | |
| (n = 172) | | | | | | | | |
| **Missing cases** | 0 | | 1 | | 1 | | 0 | |

Although most owners and crew are fishing on a 'full-time' basis, they are also heavily involved in farming work, as shown

by Tables 3.12a and 3.12b. Farming, either 'subsistence' only (i.e. for family food production) or in combination with some cash cropping, is a secondary form of employment for around 80% to over 90% of Tanzanian sample fishers, with artisanal owners in Rukwa Region representing the lower end of this range and the traditional owners of Kigoma Region the highest.

Farming whether as a subsistence or cash cropping activity is usually of a very small-scale nature, on family plots ranging from 0.1 ha to 8.0 ha (avg. = 1.1 ha, of n = 150) in Kigoma Region and from 0.2 ha to 3.2 ha (avg. = 1.0 ha, of n = 150) in Rukwa Region. Data presented in Tables 3.13a-b indicate that substantial majorities (≥ 60%) of fishers of all types claim access to at least some land, no matter how small the parcel may be.

**Table 3.12a Involvement in other work, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| | Artisanal | | Traditional | |
|---|---|---|---|---|
| **Other work** | **Owner** | **Crew** | **Owner** | **Crew** |
| **Subsistence farming %** | 48.6 | 58.2 | 53.2 | 33.3 |
| **Subsist. + Cash farming %** | 35.1 | 35.5 | 42.6 | 61.1 |
| **Fish trading %** | 10.8 | 3.6 | 4.3 | 0.0 |
| **Labourer %** | 0.0 | 1.8 | 0.0 | 0.0 |
| **Salary job%** | 0.0 | 0.0 | 0.0 | 0.0 |
| **Business %** | 0.0 | 0.0 | 0.0 | 5.6 |
| **More than one other job** | 5.4 | 0.9 | 0.0 | 0.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 |
| **Report cases** (n = 212) | 37 | 110 | 47 | 18 |
| **Missing cases** | 8 | 65 | 8 | 8 |

**Table 3.12b Involvement in other work, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Other work | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Subsistence farming % | 69.0 | 56.7 | 56.0 | 50.0 |
| Subsist. + Cash farming % | 10.3 | 28.9 | 24.0 | 43.8 |
| Fish trading % | 0.0 | 5.6 | 0.0 | 0.0 |
| Labourer % | 0.0 | 2.2 | 0.0 | 0.0 |
| Salary job% | 0.0 | 0.0 | 4.0 | 0.0 |
| Business % | 3.4 | 0.0 | 0.0 | 0.0 |
| More than one other job | 17.2 | 6.7 | 16.0 | 6.3 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 160) | 29 | 90 | 25 | 16 |
| Missing cases | 5 | 7 | 1 | 1 |

**Table 3.13a Reported ownership of land, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Any land Ownership | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| No % | 17.8 | 40.0 | 14.5 | 34.6 |
| Yes % | 82.2 | 60.0 | 85.5 | 65.4 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table 3.13b Reported ownership of land, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Any land Ownership | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| No % | 20.6 | 13.5 | 3.8 | 11.8 |
| Yes % | 79.4 | 86.5 | 96.2 | 88.2 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 173) | 34 | 96 | 26 | 17 |
| Missing cases | 0 | 1 | 0 | 0 |

Infomation collected on respondents' estimated monthly incomes is assembled Tables 3.14a-b for 'good' fishing periods, and Tables 3.15a-b for 'poor' fishing periods. Figures are given in US$ equivalents of those reported in local currency amounts during interviews. Within the artisanal fishery, owner-crew disparities in estimated income levels are readily apparent for 'good' periods, when roughly 90% of both Kigoma Region and Rukwa Region crew report making US$ 200 or less per month, as compared with roughly half of owners reporting at this level. Owner-crew 'good' period income disparities are not nearly so noticeable within the traditional fishery in either region. Kigoma Region traditional owners seem to retain a slight advantage over their crew by the US$ 200 or less level, whereas Rukwa traditional crew seem to moderately outperform their owner counterparts right up the scale.

During 'poor' fishing times, relatively few sample fishers in any category or region seem to be making even modest amounts of money per month. Only some 20% of Kigoma and Rukwa artisanal owners report 'poor' month fishing incomes above US$ 50, as compared to around 4% and 10% respectively for Kigoma and Rukwa artisanal crew. All Kigoma traditional fishers, owners and crew alike, are accounted for by the US$ 50 or less 'poor' month level. In Rukwa Region all traditional fishers are accounted for by the by the US$ 100 or less 'poor' month level.

**Table 3.14a Estimated income during 'good' fishing months, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| | Artisanal | | | | Traditional | | | |
|---|---|---|---|---|---|---|---|---|
| **Income range (US$/mo)*** | **Owner** | | **Crew** | | **Owner** | | **Crew** | |
| | **%** | **Cum%** | **%** | **Cum%** | **%** | **Cum%** | **%** | **Cum%** |
| **< 25** | 2.2 | 2.2 | 6.9 | 6.9 | 20.8 | 20.8 | 36.0 | 36.0 |
| **25 - 50** | 4.4 | 6.7 | 38.7 | 45.7 | 34.0 | 54.7 | 32.0 | 68.0 |
| **51 - 100** | 20.0 | 26.7 | 30.6 | 76.3 | 22.6 | 77.4 | 20.0 | 88.0 |
| **101 -200** | 26.7 | 53.3 | 16.2 | 92.5 | 13.2 | 90.6 | 12.0 | 100.0 |
| **201 - 500** | 22.2 | 75.6 | 6.9 | 99.4 | 9.4 | 100.0 | 0.0 | 100.0 |
| **> 500** | 24.4 | 100.0 | 0.6 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** (n = 296) | 45 | | 173 | | 53 | | 25 | |
| **Missing cases** | 0 | | 2 | | 2 | | 1 | |

* Exchange rate of US$ 1 = Tanzanian Shs. 600 applies.

**Table 3.14b Estimated income during 'good' fishing months, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Income range (US$/mo)* | Artisanal Owner % | Artisanal Owner Cum% | Artisanal Crew % | Artisanal Crew Cum% | Traditional Owner % | Traditional Owner Cum% | Traditional Crew % | Traditional Crew Cum% |
|---|---|---|---|---|---|---|---|---|
| **< 25** | 6.3 | 6.3 | 2.1 | 2.1 | 28.0 | 28.0 | 17.6 | 17.6 |
| **25 - 50** | 6.3 | 12.5 | 16.7 | 18.8 | 28.0 | 56.0 | 23.5 | 41.2 |
| **51 - 100** | 12.5 | 25.0 | 34.4 | 53.1 | 24.0 | 80.0 | 35.3 | 76.5 |
| **101 -200** | 25.0 | 50.0 | 33.3 | 86.5 | 12.0 | 92.0 | 17.6 | 94.1 |
| **201 - 500** | 21.9 | 71.9 | 10.4 | 96.9 | 8.0 | 100.0 | 5.9 | 100.0 |
| **> 500** | 28.1 | 100.0 | 3.1 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** (n = 170) | 32 | | 96 | | 25 | | 17 | |
| **Missing cases** | 2 | | 1 | | 1 | | 0 | |

* Exchange rate of US$ 1 = Tanzanian Shs. 600 applies.

**Table 3.15a Estimated income during 'poor' fishing months, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Income range (US$/mo) | Artisanal Owner % | Artisanal Owner Cum% | Artisanal Crew % | Artisanal Crew Cum% | Traditional Owner % | Traditional Owner Cum% | Traditional Crew % | Traditional Crew Cum% |
|---|---|---|---|---|---|---|---|---|
| **< 10** | 62.2 | 62.2 | 74.6 | 74.6 | 64.2 | 64.2 | 80.0 | 80.0 |
| **10 - 20** | 8.9 | 71.1 | 11.0 | 85.5 | 18.9 | 83.0 | 16.0 | 96.0 |
| **21 - 50** | 6.7 | 77.8 | 11.0 | 96.5 | 17.0 | 100.0 | 4.0 | 100.0 |
| **51 - 100** | 8.9 | 86.7 | 2.9 | 99.4 | 0.0 | 100.0 | 0.0 | 100.0 |
| **101 - 250** | 2.2 | 88.9 | 0.6 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| **> 250** | 11.1 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** (n = 296) | 45 | | 173 | | 53 | | 25 | |
| **Missing cases** | 0 | | 2 | | 2 | | 1 | |

* Exchange rate of US$ 1 = Tanzanian Shs. 600 applies.

**Table 3.15b Estimated income during 'poor' fishing months, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Income range (US$/mo) | Artisanal Owner % | Artisanal Owner Cum% | Artisanal Crew % | Artisanal Crew Cum% | Traditional Owner % | Traditional Owner Cum% | Traditional Crew % | Traditional Crew Cum% |
|---|---|---|---|---|---|---|---|---|
| **< 10** | 38.7 | 38.7 | 36.5 | 36.5 | 48.0 | 48.0 | 58.8 | 58.8 |
| **10 - 20** | 12.9 | 51.6 | 22.9 | 59.4 | 24.0 | 72.0 | 23.5 | 82.4 |
| **21 - 50** | 29.0 | 80.6 | 30.2 | 89.6 | 24.0 | 96.0 | 17.6 | 100.0 |
| **51 - 100** | 6.5 | 87.1 | 5.2 | 94.8 | 4.0 | 100.0 | 0.0 | 100.0 |
| **101 - 250** | 9.7 | 96.8 | 5.2 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| **> 250** | 3.2 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** (n = 169) | 31 | | 96 | | 25 | | 17 | |
| **Missing cases** | 3 | | 1 | | 1 | | 0 | |

* Exchange rate of US$ 1 = Tanzanian Shs. 600 applies.

## 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

Tanzania sample fishers on the whole express the desire to continue in their fishing work (Tables 3.16a-b). This commitment is moderately stronger amongst owners as a group, except in the case of Rukwa traditional fishers, for whom a somewhat higher proportion of crew (94%) than owners (85%) states a preference to continue in fishing.

Kigoma and Rukwa respondent fishers at the same time are mostly inclined to continue operating out of their present locations (Tables 3.17a-b). However, sizeable minorities of artisanal crew in Kigoma (33%) and Rukwa (40%) and traditional crew in Kigoma (42%) state a preference to relocate elsewhere.

**Table 3.16a Stated preference for continuing in fishing occupation, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Preference to Continue? | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 88.9 | 69.1 | 80.0 | 69.2 |
| 'No' % | 11.1 | 29.7 | 20.0 | 30.8 |
| 'No opinion' % | 0.0 | 1.1 | 0.0 | 0.00 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table 3.16b Stated preference for continuing in fishing occupation, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Preference to Continue? | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 94.1 | 75.3 | 84.6 | 94.1 |
| 'No' % | 5.9 | 23.7 | 15.4 | 5.9 |
| 'No opinion' % | 0.0 | 1.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table 3.17a Stated preference for staying in present location, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Preference to stay? | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 91.1 | 66.3 | 78.2 | 57.7 |
| 'No' % | 8.9 | 32.6 | 20.0 | 42.3 |
| 'No opinion' % | 0.0 | 1.1 | 1.8 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table 3.17b Stated preference for staying in present location, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Preference to stay? | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 79.4 | 59.8 | 92.3 | 94.1 |
| 'No' % | 17.6 | 40.2 | 7.7 | 5.9 |
| 'No opinion' % | 2.9 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

Tanzania respondent fishers do not reinforce the impression of their commitment to stay with their occupation when they talk about the way they would invest or otherwise spend a hypothetical lump sum of money. In answering the question about how one would use a year's worth of savings from fishing work (assuming this amount was all together in one place at one time), respondents were asked to mention their first, second, and third preferences. As shown in Table 3.18a for Kigoma, stated use preferences across all categories do not particularly emphasise fishing gear and equipment investments. First preference mentions related to family welfare purposes (house improvements, children's education, etc.) eclipse combined totals for the acquisition of things like gear (nets, lines, etc.), fishing lamps, boats, or outboard engines. This pattern holds for Kigoma second and third preference mentions as well, except that business/shop investment purposes vie with those of family welfare in taking priority over gear/equipment-related investments.

Rates at which Rukwa sample fishers (Table 3.18b) express favour towards gear/equipment-related investments are stronger than for their Kigoma counterparts, but not emphatically so. There are slight majorities for first preference mentions of gear/equipment purposes amongst traditional and artisanal owners, and traditional crew assign gear/equipment and family welfare purposes a first preference priority at equal frequencies. Rates of gear/equipment investment mentions appear to lead others amongst artisanal and traditional crew for Rukwa second preference lists, and amongst traditional owners only for Rukwa third preference lists.

**Table 3.18a Stated preferences for use of one year's savings, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| First Stated Use Preference | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Fishing gear % | 31.1 | 21.1 | 29.1 | 19.2 |
| Fishing lamps % | 2.2 | 0.6 | 0.0 | 3.8 |
| Boat % | 0.0 | 1.1 | 1.8 | 0.0 |
| O/B Engine % | 4.4 | 0.0 | 0.0 | 0.0 |
| Invest processing/trading % | 0.0 | 0.0 | 0.0 | 0.0 |
| Invest farming % | 13.3 | 12.0 | 9.1 | 19.2 |
| Invest business/shop % | 0.0 | 20.0 | 18.2 | 19.2 |
| Family welfare % purposes | 46.7 | 44.6 | 41.8 | 34.6 |
| Other % | 2.2 | 0.6 | 0.0 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 301) | 45 | 175 | 55 | 26 |

**Table 3.18a (Cont.)**

| Second Stated Use Preference | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Fishing gear % | 11.4 | 17.0 | 18.0 | 26.1 |
| Fishing lamps % | 0.0 | 1.8 | 0.0 | 0.0 |
| Boat % | 0.0 | 1.8 | 4.0 | 0.0 |
| O/B Engine % | 2.3 | 1.8 | 2.0 | 0.0 |
| Invest processing/trading % | 0.0 | 0.0 | 0.0 | 0.0 |
| Invest farming % | 31.8 | 23.0 | 16.0 | 21.7 |
| Invest business/shop % | 13.6 | 29.1 | 36.0 | 30.4 |
| Family welfare % purposes | 38.6 | 24.8 | 24.0 | 17.4 |
| Other % | 2.3 | 0.6 | 0.0 | 4.3 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 282) | 44 | 165 | 50 | 23 |
| Missing cases | 1 | 10 | 5 | 3 |

| Third Stated Use Preference | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Fishing gear % | 9.8 | 13.8 | 16.3 | 6.3 |
| Fishing lamps % | 2.4 | 0.9 | 0.0 | 0.0 |
| Boat % | 0.0 | 0.9 | 2.3 | 0.0 |
| O/B Engine % | 0.0 | 1.7 | 2.3 | 0.0 |
| Invest processing/trading % | 0.0 | 0.0 | 0.0 | 0.0 |
| Invest farming % | 12.2 | 18.1 | 9.3 | 31.3 |
| Invest business/shop % | 39.0 | 41.4 | 27.9 | 37.5 |
| Family welfare % purposes | 29.3 | 21.6 | 41.9 | 25.0 |
| Other % | 7.3 | 1.7 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 216) | 41 | 116 | 43 | 16 |
| Missing cases | 4 | 59 | 12 | 10 |

**Table 3.18b Stated preferences for use of one year's savings, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| First Stated Use Preference | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Fishing gear % | 47.1 | 28.9 | 46.2 | 41.2 |
| Fishing lamps % | 0.0 | 0.0 | 0.0 | 0.0 |
| Boat % | 5.9 | 4.1 | 7.7 | 0.0 |
| O/B Engine % | 0.0 | 0.0 | 0.0 | 0.0 |
| Invest processing/trading % | 0.0 | 0.0 | 0.0 | 0.0 |
| Invest farming % | 0.0 | 4.1 | 15.4 | 5.9 |
| Invest business/shop % | 5.9 | 16.5 | 11.5 | 11.8 |
| Family welfare % purposes | 38.2 | 46.4 | 19.2 | 41.2 |
| Other % | 2.9 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 174) | 34 | 97 | 26 | 17 |

**Table 3.18b (Cont.)**

| Second Stated Use Preference | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Fishing gear % | 20.0 | 25.5 | 26.7 | 18.2 |
| Fishing lamps % | 0.0 | 0.0 | 0.0 | 0.0 |
| Boat % | 3.3 | 7.4 | 0.0 | 4.5 |
| O/B Engine % | 6.7 | 6.4 | 0.0 | 13.6 |
| Invest processing/trading % | 0.0 | 0.0 | 0.0 | 0.0 |
| Invest farming % | 3.3 | 14.9 | 0.0 | 22.7 |
| Invest business/shop % | 13.3 | 21.3 | 26.7 | 9.1 |
| Family welfare % purposes | 50.0 | 23.4 | 46.7 | 31.8 |
| Other % | 3.3 | 1.1 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 161) | 30 | 94 | 15 | 22 |
| Missing cases | 4 | 3 | 11 | 5 |

| Third Stated Use Preference | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Fishing gear % | 12.5 | 15.8 | 11.8 | 18.2 |
| Fishing lamps % | 0.0 | 0.0 | 0.0 | 0.0 |
| Boat % | 4.2 | 2.6 | 17.6 | 9.1 |
| O/B Engine % | 4.2 | 3.9 | 11.8 | 0.0 |
| Invest processing/trading % | 0.0 | 0.0 | 0.0 | 0.0 |
| Invest farming % | 25.0 | 17.1 | 11.8 | 45.5 |
| Invest business/shop % | 33.3 | 32.9 | 11.8 | 18.2 |
| Family welfare % purposes | 20.8 | 27.6 | 29.4 | 9.1 |
| Other % | 0.0 | 0.0 | 5.9 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 128) | 24 | 76 | 17 | 11 |
| Missing cases | 10 | 21 | 9 | 16 |

### 3.4.2 State of resources and use rights

***Perceived state of commercial fish stocks***

Tanzania sample fishers overall take a distinctly negative view of catch changes over the recent past, but are less sure about how catches will evolve in the near future. For Kigoma fishers (Table 3.19a), over 90% of both types of owners assert that that catches have declined over the years since they first started fishing. Amongst Kigoma crew, some 75% of artisanals and over 80% of traditionals also think this to be the case.

For Rukwa fishers (Table 3.19b), 85% of artisanal owners and 81% of traditional owners agree that catches have declined over the course of their fishing careers. Rukwa crew largely think the same, at rates of about 61% for artisanals and 77% for traditionals.

**Table 3.19a View of catches compared to when first started fishing, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Change from when first started? | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Increase' % | 0.0 | 4.6 | 1.8 | 3.9 |
| 'Decrease' % | 91.1 | 75.4 | 92.7 | 80.8 |
| 'Similar' % | 2.2 | 6.3 | 3.6 | 0.0 |
| 'No opinion' % | 6.7 | 13.7 | 1.8 | 15.4 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |

**Table 3.19b View of catches compared to when first started fishing, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Change from when first started? | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Increase' % | 11.8 | 15.5 | 7.7 | 0.0 |
| 'Decrease' % | 85.3 | 60.8 | 80.8 | 76.5 |
| 'Similar' % | 0.0 | 5.2 | 7.7 | 0.0 |
| 'No opinion' % | 2.9 | 18.6 | 3.9 | 23.5 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |

When asked to explain why they though catches have declined over recent years, many sample fishers could not provide a reason. Others were split between assigning the cause to 'poor fishing methods,' 'over-fishing,' and 'environmental change' (Tables 3.20a-b).

**Table 3.20a Reasons cited for catch decrease from before, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Reason cited | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Don't know' % | 17.5 | 33.3 | 25.5 | 45.0 |
| 'God's will' % | 0.0 | 1.7 | 3.9 | 0.0 |
| 'Over-fishing/stock decline' % | 25.0 | 14.5 | 21.6 | 20.0 |
| 'Industrial fishing' % | 5.0 | 2.6 | 3.9 | 0.0 |
| 'Use of small mesh sizes' % | 0.0 | 0.9 | 0.0 | 0.0 |
| 'Presence foreign fishers' % | 2.5 | 0.0 | 0.0 | 0.0 |
| 'Poor fishing methods' % | 42.5 | 30.8 | 35.3 | 20.0 |
| 'Environmental change' % | 7.5 | 16.2 | 9.8 | 15.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 228) | 40 | 117 | 51 | 20 |
| Missing cases | 1 | 15 | 0 | 1 |

**Table 3.20b Reasons cited for catch decrease from before, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Reason cited | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Don't know' % | 37.9 | 38.6 | 40.0 | 23.1 |
| 'God's will' % | 6.9 | 1.8 | 5.0 | 0.0 |
| 'Over-fishing/stock decline' % | 24.1 | 24.6 | 20.0 | 30.8 |
| 'Industrial fishing' % | 0.0 | 0.0 | 5.0 | 0.0 |
| 'Use of small mesh sizes' % | 0.0 | 0.0 | 5.0 | 0.0 |
| 'Presence foreign fishers' % | 0.0 | 0.0 | 0.0 | 0.0 |
| 'Poor fishing methods' % | 24.1 | 21.1 | 15.0 | 30.8 |
| 'Environmental change' % | 6.9 | 14.0 | 10.0 | 15.4 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 119) | 29 | 57 | 20 | 13 |
| Missing cases | 0 | 2 | 1 | 0 |

A rather different picture emerges when respondents are asked for their assessments of catch trends over the next five year period (Tables 3.21a-b). In both regions fishers tend to be divided between believing that there will be a continued pattern of decline and not having any opinion on the matter.

**Table 3.21a View of catches anticipated for next five years, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Change anticipated? | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Increase' % | 15.6 | 12.6 | 21.8 | 0.0 |
| 'Decrease' % | 44.4 | 38.9 | 41.8 | 30.8 |
| 'Similar' % | 2.2 | 3.4 | 1.8 | 3.8 |
| 'No opinion' % | 37.8 | 45.1 | 34.5 | 65.4 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases(N = 301) | 45 | 175 | 55 | 26 |

**Table 3.21b View of catches anticipated for next five years, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Change anticipated? | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Increase' % | 14.7 | 14.4 | 11.5 | 0.0 |
| 'Decrease' % | 50.0 | 41.2 | 61.5 | 58.8 |
| 'Similar' % | 0.0 | 0.0 | 0.0 | 0.0 |
| 'No opinion' % | 35.3 | 44.3 | 26.9 | 41.2 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases(N = 174) | 34 | 97 | 26 | 17 |

***Views on resource use rights***

Despite their generally held view that catches have been on a declining trend in the recent past, and their uncertainty or even outright pessimism about what future trends, Tanzanian fisher respondents as a group do not seem to be strongly in favour of limiting access to the lake's fish resources. Indeed, when faced with the rather abstract proposition that 'everyone' should be allowed to fish 'everywhere,' the response is quite decidedly positive (Figs. 3.1a-b).[3]

The same is true for responses to the proposition when it is cast in the more specific terms of 'fishing outside one's own district' (Figs. 3.2a-b). Very heavy majorities in all fisher categories seem to advocate this idea. However, when asked about allowing people to fish 'even outside their own country' (Figs. 3.3a-b), opinion in the sample population becomes more

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

evenly divided. In Kigoma Region, slight to moderate majorities of artisanal crew, traditional owners, and traditional crew aver that such a practices should be allowed, whereas a slight majority of artisanal owners disagree. In Rukwa, slight majorities of artisanals (owners and crew) are for the idea, whilst it is not at all popular amongst traditionals.

**Fig. 3.1a 'Allow everyone to fish everywhere.' (Kigoma Fishers)**

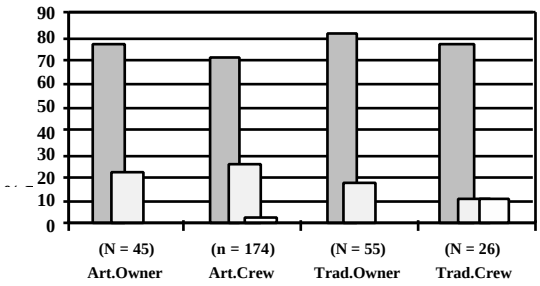



**Fig. 3.1b 'Allow everyone to fish everywhere.' (Rukwa Fishers)**

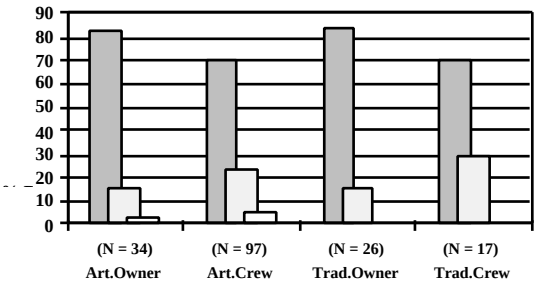



**Fig. 3.2a 'Allow people to fish outside own district. (Kigoma fishers)**

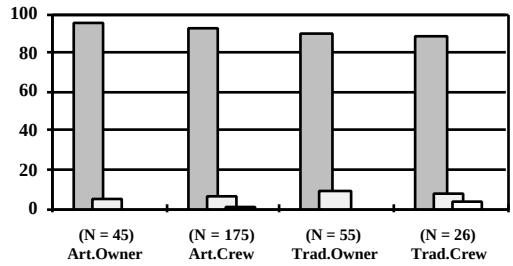



**Fig. 3.2b 'Allow people to fish outside own district. (Rukwa fishers)**

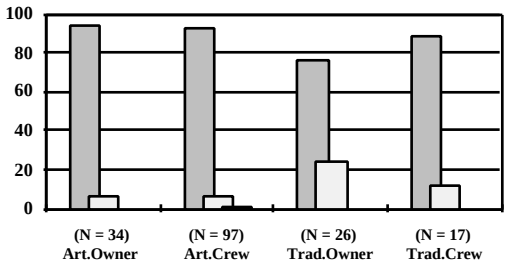



**Fig. 3.3a 'Allow people to fish outside own country. (Kigoma fishers)**

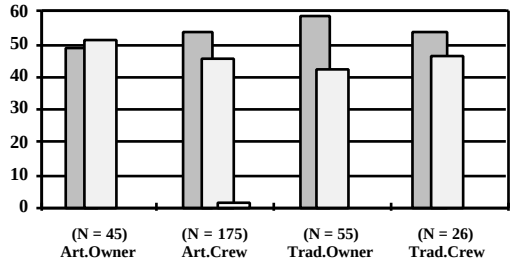



**Fig. 3.3b 'Allow people to fish outside own country. (Rukwa fishers)**

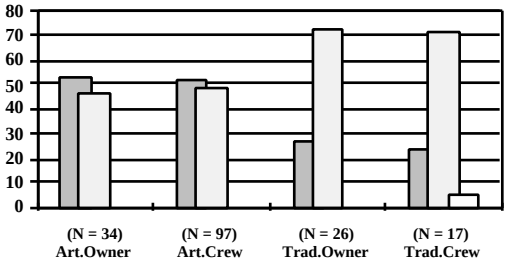



**FIGURE LEGEND**

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

The general disinclination to impose strong access limitations on the lake's fisheries resources, at least insofar as nationals operating within national waters are concerned, might well be linked to the absence of a strong conviction, for the Tanzanian sample population as a group, that catches are likely to decline in the near future. As noted above (Tables 3.21a-b), though many do anticipate such decline, there are considerable numbers who do not choose to venture an opinion. A second reading on respondents' perceptions of resource abundance, by means of the data shown in Figs. 3.4a-b, yields the same sense of fragmented opinion and uncertainty. There is no strong majority in any fisher category responding with a definite 'yea' or 'nay' to the proposition that there will 'always be enough fish for everybody.' Very frequently fishers choose to place themselves in the 'no opinion' column.

**Fig. 3.4a 'Always enough fish for everybody in future. (Kigoma fishers)**

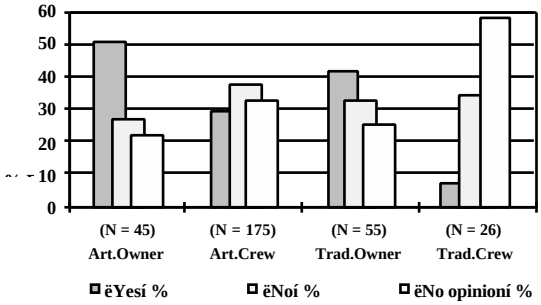
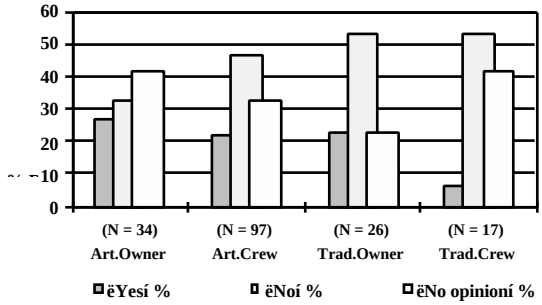



**Fig. 3.4b 'Always enough fish for everybody in future (Rukwa fishers)**




### 3.4.3 Possible regulations on access, gear, and methods

Data on fisher sample respondent's 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 (3.5a - 3.19b). Results show a consensus against imposition of strong measures to limit access by season or operator quotas, or to curb the use of common types of gear. At the same time, the principle that some kinds of restrictions should apply seems to be generally accepted.

Moderate to strong majorities of fishers in all categories across both regions are opposed to: a) any provision for closed fishing seasons or times (Figs. 3.5a-b); b) any restriction of numbers of fishers (Figs. 3.7a-b); and c) any ban on beach seines (Figs. 3.16a-b) or lift nets (Figs. 3.18a-b), or any even restriction (time or place) for their operation (Figs. 3.15a-b and 3.17a-b).

On the other hand, Tanzanian sample fishers appear to be quite soundly in favour of restrictions on mininum mesh sizes for: a) gillnets (Figs. 3.9a-b); b) beach seines (Figs. 3.10a-b); c) kapenta beach seines (Figs. 3.11a-b); and d) lift nets (Figs. 3.12a-b).

Reaction to other possible measures across the sample is less uniform. Opinion is divided over the issue of establishing closed areas or places (reserves) in both Kigoma and Rukwa regions, with many respondents opting to take no stance on the

matter at all (Figs. 3.6a-b). On the question of restricting industrial gear, a majority of respondents in all fisher categories within Rukwa region agree that this step should be taken, whereas amongst Kigoma fishers, with the exception of artisanal owners, there is a tendency to disagree (Figs. 3.13a-b). Kigoma fishers are also generally of the view that no outright prohibition should be imposed on industrial gear, whilst their counterparts in Rukwa take differing positions. Rukwa artisanal owners mostly think that industrial fishing should not be banned, but their crew are less sure one way or the other (Figs. 3.14a-b). A solid majority of Rukwa traditional owners are in favour of industrial gear prohibition, whilst an almost equal majority of traditional crew are opposed. Finally, with reference to the banning of 'katuli,' fishing (scaring fish into nets by loud striking on the surface of the water), Rukwa fishers as a group are generally in favour of such a measure, whereas in Kigoma only artisanal and traditional owners tend to advocate it (Figs. 3.19a-b).

**Fig. 3.5a 'Closed fishing seasons/times. (Kigoma fishers)**

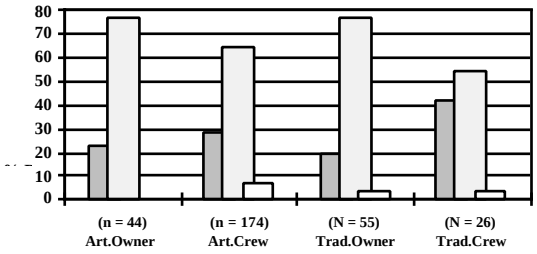



**Fig. 3.5b 'Closed fishing seasons/times. (Rukwa fishers)**

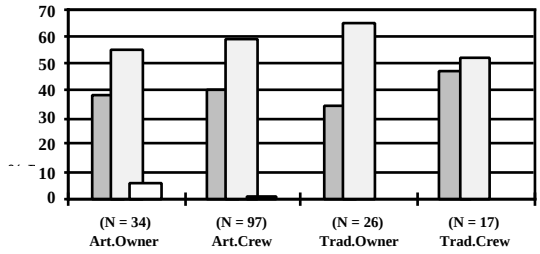



**Fig. 3.6a 'Closed fishing areas/places.' (Kigoma fishers)**

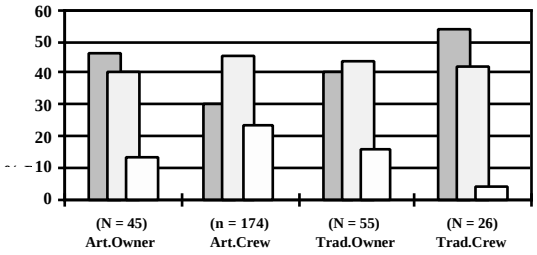



**Fig. 3.6b 'Closed fishing areas/places. (Rukwa fishers)**

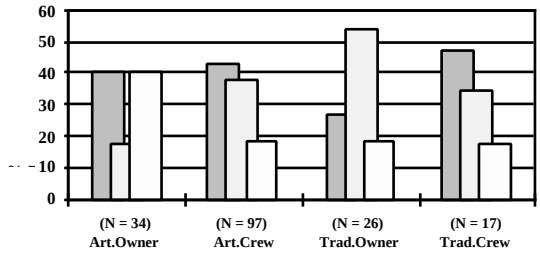



**Fig. 3.7a 'Restriction on number of fishers.' (Kigoma fishers)**

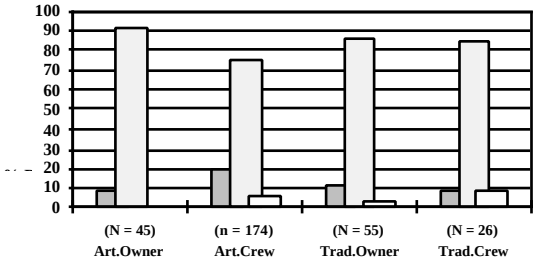



**Fig. 3.7b 'Restriction on number of fishers.' (Rukwa fishers)**

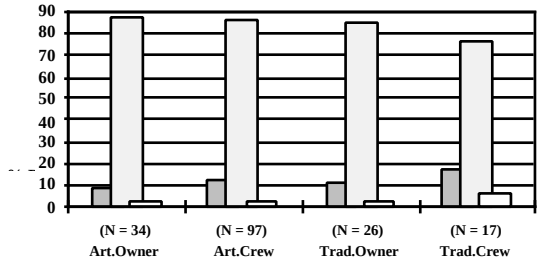



**Fig. 3.8a 'Restriction on mesh sizes.' (Kigoma fishers)**

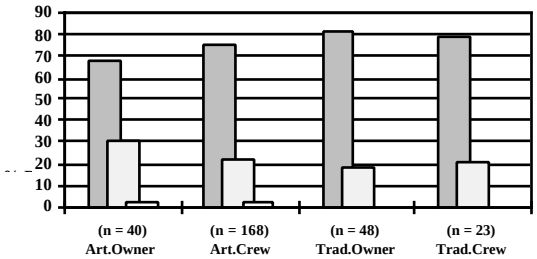



**Fig. 3.8b 'Restriction on mesh sizes.' (Rukwa fishers)**

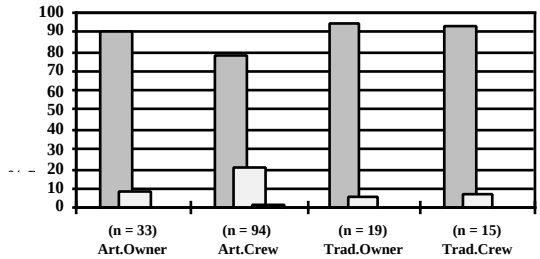



**FIGURE LEGEND**

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

**Fig. 3.9a 'Restriction on gillnet mesh size.'**
**(Kigoma fishers)**

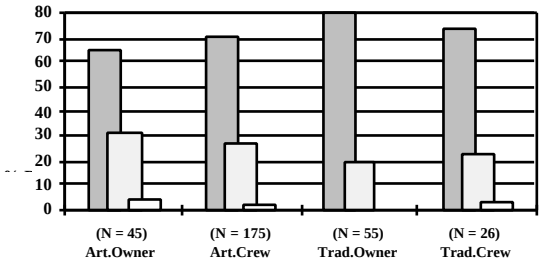



**Fig. 3.9b 'Restriction on gillnet mesh size.'**
**(Rukwa fishers)**

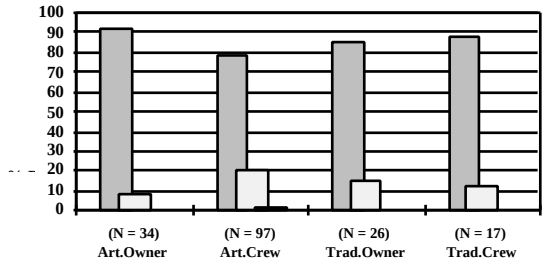



**Fig. 3.10a 'Restriction on beach seine mesh size.'**
**(Kigoma fishers)**

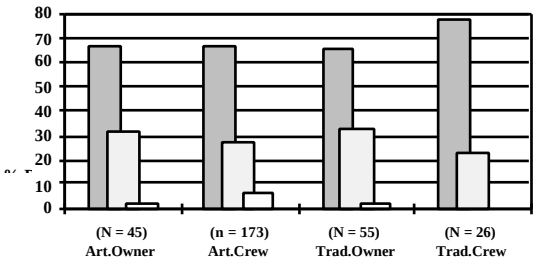



**Fig. 3.10b 'Restriction on beach seine mesh size.'**
**(Rukwa fishers)**

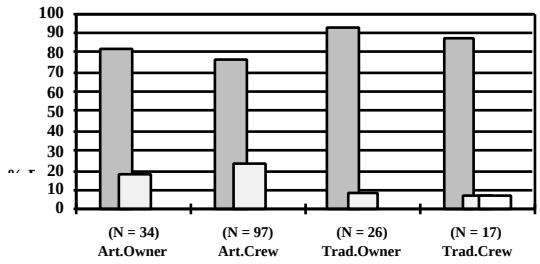



**Fig. 3.11a 'Restriction on kapenta beach seine mesh size.'**
**(Kigoma fishers)**

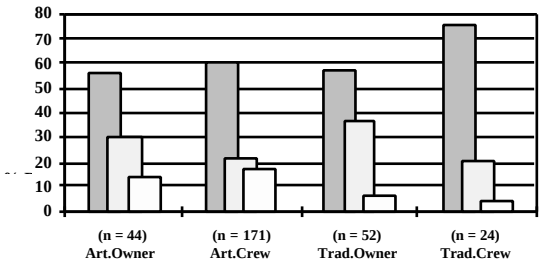



**Fig. 3.11b 'Restriction on kapenta beach seine mesh size.'**
**(Rukwa fishers)**

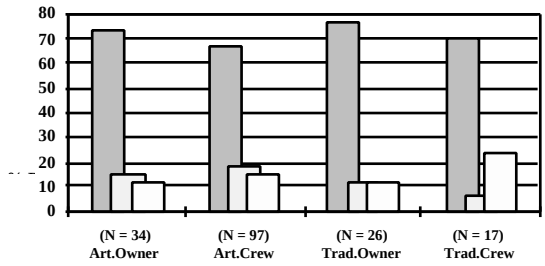



**Fig. 3.12a 'Restriction on lift net mesh size.'**
**(Kigoma fishers)**

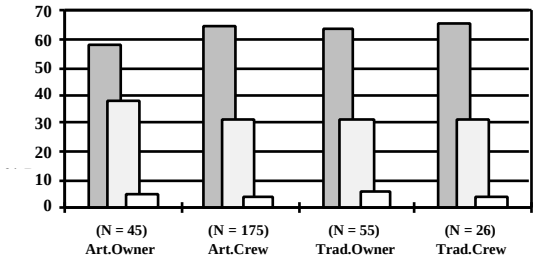



**Fig. 3.12b 'Restriction on lift net mesh size.'**
**(Rukwa fishers)**

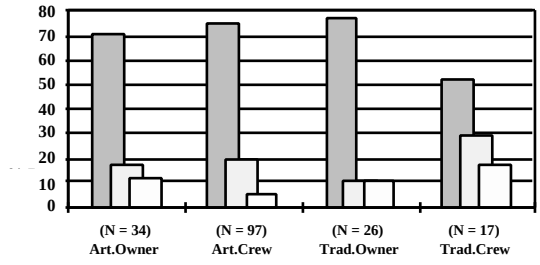



**FIGURE LEGEND**
**■ 'Agree' % □ 'Disagree' % □ 'No opinion' %**

**Fig. 3.13a 'Restriction on industrial gear.' (Kigoma fishers)**

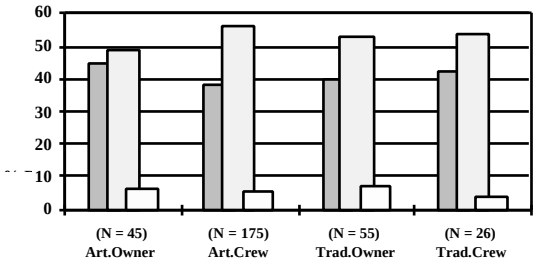



**Fig. 3.13b 'Restriction on industrial gear.' (Rukwa fishers)**

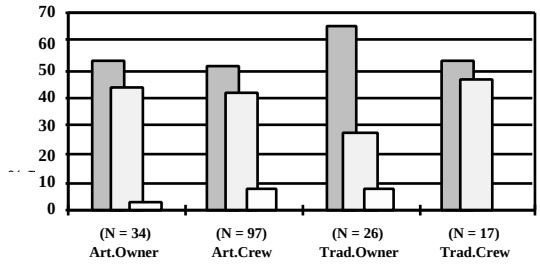



**Fig. 3.14a 'Prohibition on industrial gear. (Kigoma fishers)**

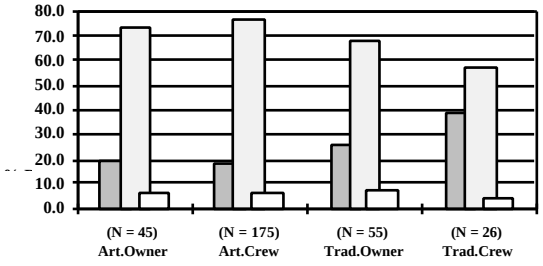



**Fig. 3.14b 'Prohibition on industrial gear. (Rukwa fishers)**

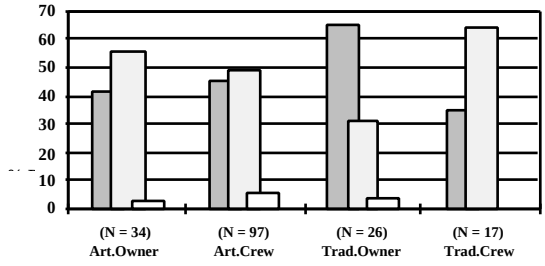



**Fig. 3.15a 'Restriction on beach seines.' (Kigoma fishers)**

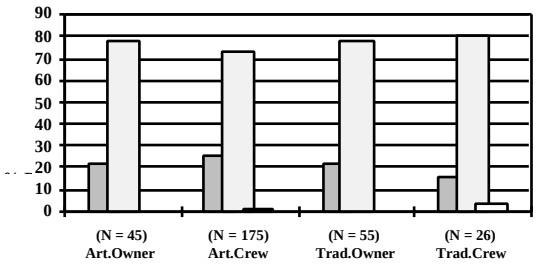



**Fig. 3.15b 'Restriction on beach seines.' (Rukwa fishers)**

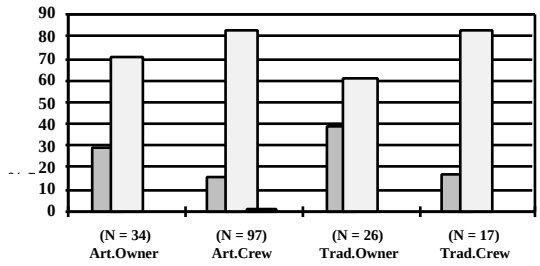



**Fig. 3.16a 'Prohibition on beach seines.' (Kigoma fishers)**

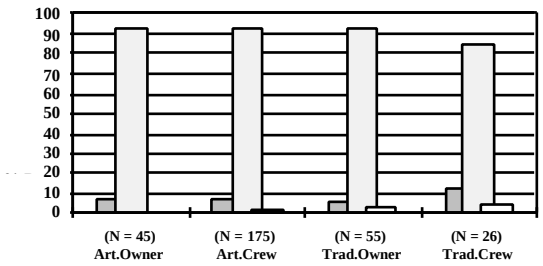



**Fig. 3.16b 'Prohibition on beach seines. (Rukwa fishers)**

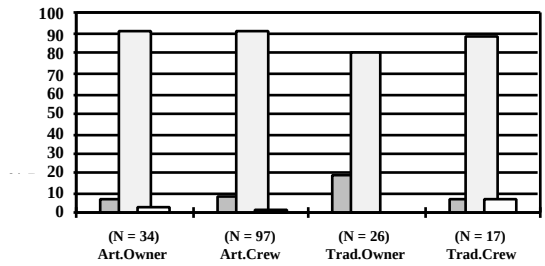



**FIGURE LEGEND**

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

Fig. 3.17a 'Restriction on lift nets.'
(Kigoma fishers)

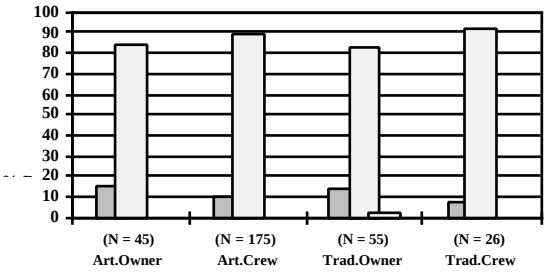



Fig. 3.17b 'Restriction on lift nets.'
(Rukwa fishers)

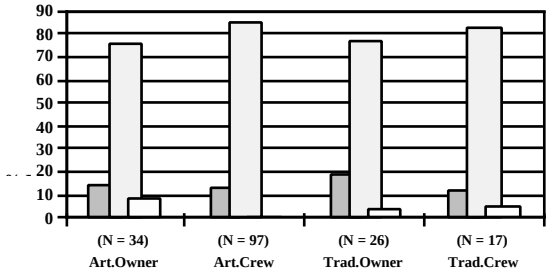



Fig. 3.18a 'Prohibition on lift nets.
(Kigoma fishers)

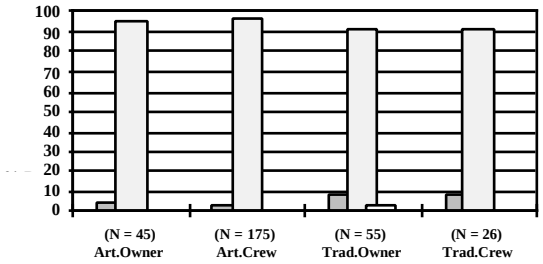



Fig. 3.18b 'Prohibition on lift nets.
(Rukwa fishers)

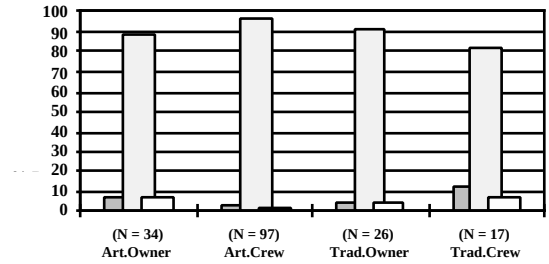



Fig. 3.19a 'Prohibition on 'katuli' fishing.
(Kigoma fishers)

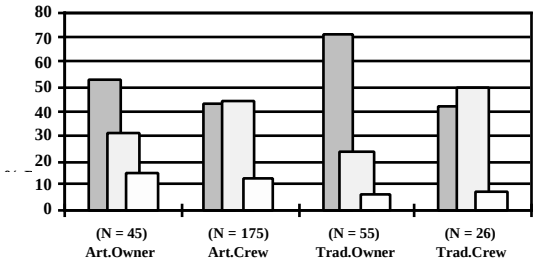



Fig. 3.19b 'Prohibition on 'katuli' fishing.
(Rukwa fishers)

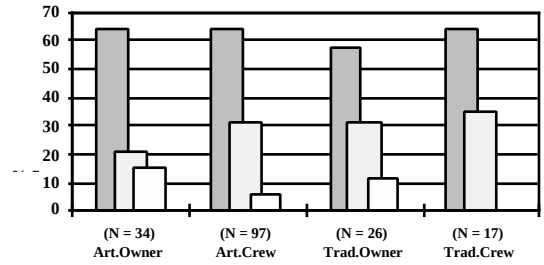



**FIGURE LEGEND**
**■ 'Agree' % □ 'Disagree' % □ 'No opinion' %**

### 3.4.4 Role of government and fisheries authorities

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. Just as in the matter of the principle of regulation reviewed above, results displayed in the following set of figures show a pattern of general consensus between the different categories of Tanzanian fisher respondents, whether for or against the particular proposition being posed.

To begin with, there appears to be a measure of sentiment against the idea that fishing rules 'should only be decided by the Government' (Figs. 3.20a-b). The smallest margin of majority against such an approach is found with artisanal crew

in Rukwa Region, who register at a rate of about 52%. Their owner counterparts weigh in with a rate of almost 59% dissent, whilst amongst traditional owner and crew fishers figures of above 53% are recorded. In the Kigoma region a similar range of moderate to strong consensus of opinion against the 'only by Government' proposition is apparent (from a slight majority of 53% for artisanal crew up to a large majority of 78% for artisanal owners). It is clear from reference to Tables 3.22a-b, which array the proportions of reasons cited for negative responses, that most fishers regard the elaboration of a regulatory code as one of joint responsibility between officials and local community members.

**Fig. 3.20a 'Rules only to be decided by government.' (Kigoma fishers)**

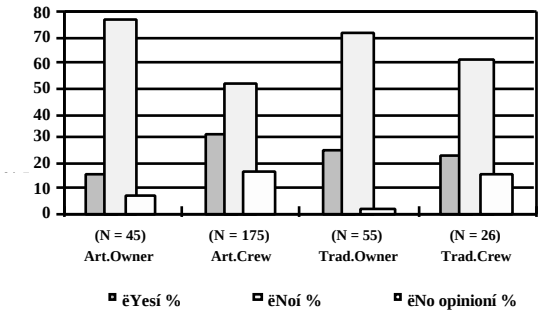



**Fig. 3.20b 'Rules only to be decided by government.' (Rukwa fishers)**

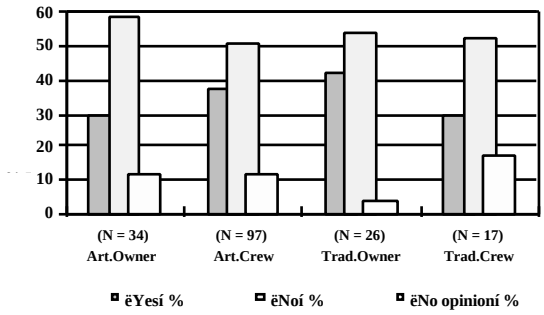



**Table 3.22a Reasons cited for why fishing restrictions should not only be decided by government, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Power/responsibity of gov't' % | 0.0 | 0.0 | 0.0 | 0.0 |
| 'Gov't has the knowledge' % | 0.0 | 0.0 | 0.0 | 0.0 |
| ' Shared responsibility, gov't + fishers' % | 84.8 | 73.9 | 71.1 | 85.7 |
| 'Power/responsibity of fishers' % | 0 | 8.0 | 5.3 | 0 |
| 'Fishers have the knowledge' | 15.2 | 18.1 | 23.6 | 14.3 |
| 'No opinion' % | 0.0 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 173) | 33 | 88 | 38 | 14 |
| Missing cases | 2 | 4 | 2 | 2 |

**Table 3.22b Reasons cited for why fishing restrictions should not only be decided by government, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Power/responsibity of gov't' % | 0.0 | 0.0 | 0.0 | 0.0 |
| 'Gov't has the knowledge' % | 0.0 | 0.0 | 0.0 | 0.0 |
| ' Shared responsibility, gov't + fishers' % | 100.0 | 80.0 | 83.3 | 100.0 |
| 'Power/responsibity of fishers' % | 0.0 | 11.1 | 8.3 | 0.0 |
| 'Fishers have the knowledge' | 0.0 | 8.9 | 8.3 | 0.0 |
| 'No opinion' % | 0.0 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 81) | 17 | 45 | 12 | 7 |
| Missing cases | 2 | 4 | 2 | 2 |

Figures 3.21a to 3.25b 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?' Local Tanzanian fisher respondents in both regions express solid agreement as a group that there should be: a) more fisheries patrol boats; b) punishment of fishers who violate regulations (fines, gear confiscation, and/or withdrawal of fishing permit); and c) punishment of traders and consumers who violate regulations (fines, product confiscation, and/or withdrawal of trading permit). Group majority opinion is less solid but still in favour of the proposition that there should be 'more fishery scouts for enforcement.' Finally, with regard to 'more direct police involvement in fishery enforcement,' opinion is moderately to strongly in favour of the idea amongst all Kigoma sample respondents and amongst artisanal fisher respondents in Rukwa. Traditional Rukwa fishers are generally opposed to it.

**Fig. 3.21a 'Should be more patrol boats. (Kigoma fishers)**

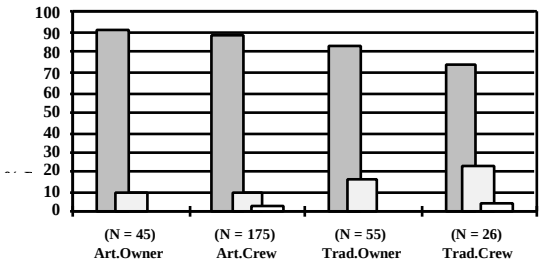



**Fig. 3.21b 'Should be more patrol boats. (Rukwa fishers)**

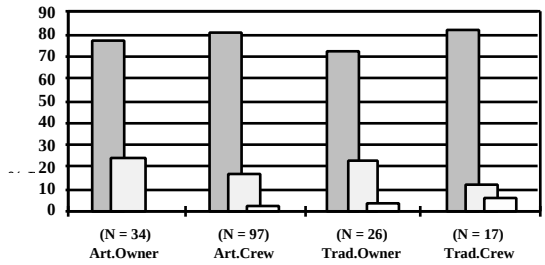



**Fig. 3.22a 'Should be more fishery scouts. (Kigoma fishers)**

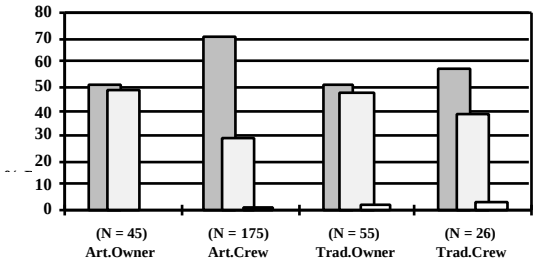



**Fig. 3.22b 'Should be more fishery scouts. (Rukwa fishers)**

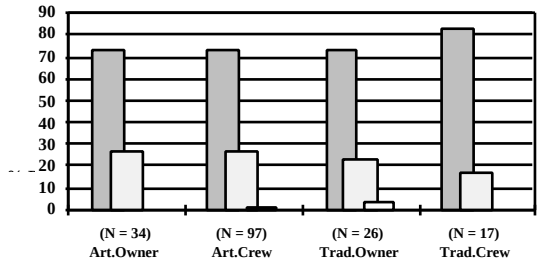



**Fig. 3.23a 'Involve police more directly in enforcement.' (Kigoma fishers)**

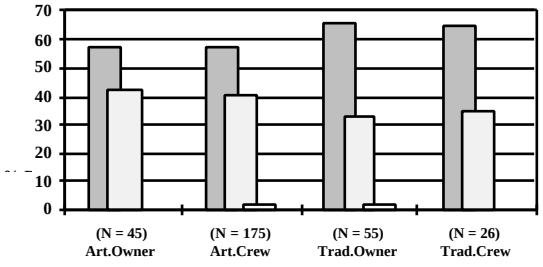



**Fig. 3.23b 'Involve police more directly in enforcement.' (Rukwa fishers)**

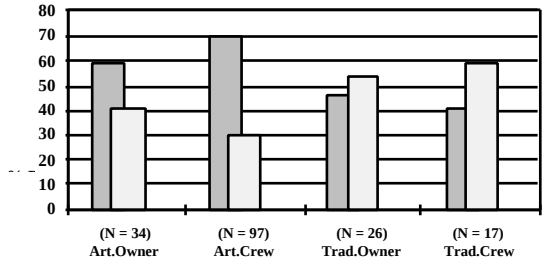



**FIGURE LEGEND**

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

**Fig. 3.24a 'Should punish offending fishers (Kigoma fishers)**

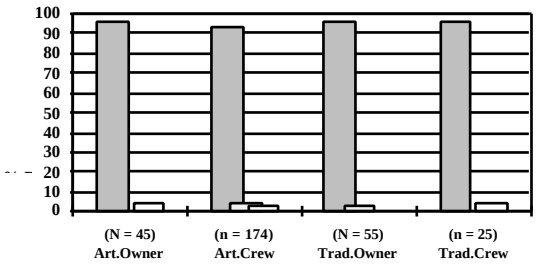



**Fig. 3.24b 'Should punish offending fishers (Rukwa fishers)**

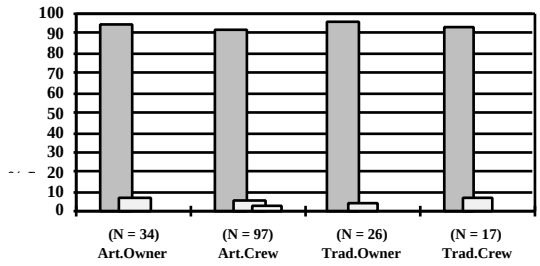



**Fig. 3.25a 'Should punish offending traders/consumers (Kigoma fishers)**

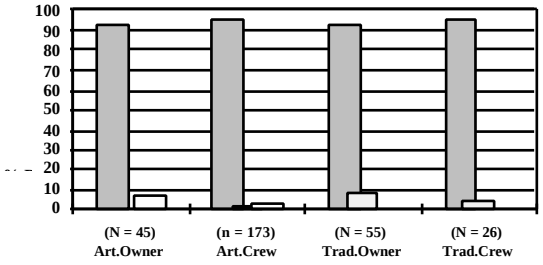



**Fig. 3.25b 'Should punish offending traders/consumers (Rukwa fishers)**

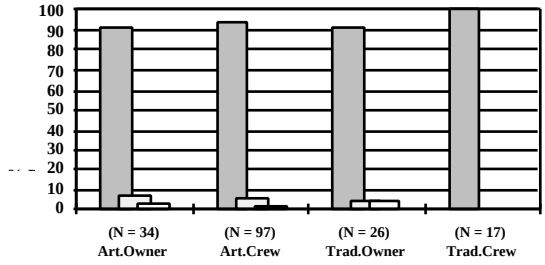



**FIGURE LEGEND**
**■ 'Agree' % □ 'Disagree' % □ 'No opinion' %**

### 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 3.23a - 3.24b), because a sizeable number of respondents did not mention a third order problem. What clearly stands out in any event is a widely shared sense of concern for the security situation on the lake. Artisanal sample fishers within both regions feel that theft is the worst problem they encounter, and they are joined by a substantial majority of Rukwa traditional crew. Many traditional fishers in Kigoma Region and traditional owners in Rukwa region also believe that theft is a serious problem, but majorities within these categories put gear problems (either lack of availability or inadequate availability in terms of quantity or quality) at the head of their most serious problem list. As a second order problem, the 'lack of/inadequate gear' theme has the most prominent rate of mention across all fisher categories in both regions.

**Table 3.23a Most serious occupational problem cited, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Lack of security | 62.2 | 60.5 | 30.9 | 38.5 |
| Low catches/profit | 6.7 | 5.2 | 10.9 | 11.5 |
| Seasonal fluctuations | 0.0 | 0.6 | 0.0 | 0.0 |
| Lack of/inadequate gear | 24.4 | 32.0 | 56.4 | 46.2 |
| Lack of engine/fuel | 2.2 | 0.0 | 0.0 | 0.0 |
| Lack of/poor processing facilities | 0.0 | 0.0 | 0.0 | 0.0 |
| Transport problems (to market) | 2.2 | 0.0 | 0.0 | 0.0 |
| Problems with industrial companies | 0.0 | 0.0 | 0.0 | 3.8 |
| Lack of /inadequate regulations | 0.0 | 0.0 | 0.0 | 0.0 |
| Excessive regulationa | 0.0 | 1.7 | 1.8 | 0.0 |
| Excessive fees/taxes/levies | 2.2 | 0.0 | 0.0 | 0.0 |
| Lack of Gov't aid | 0.0 | 0.0 | 0.0 | 0.0 |
| Weather conditions | 0.0 | 0.0 | 0.0 | 0.0 |
| Presence of foreigners | 0.0 | 0.0 | 0.0 | 0.0 |
| Safety problems/poor working conditions | 0.0 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 298) | 45 | 172 | 55 | 26 |

**Table 3.23b Most serious occupational problem cited, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Lack of security | 61.8 | 65.3 | 38.5 | 62.5 |
| Low catches/profit | 5.9 | 5.3 | 3.8 | 6.3 |
| Seasonal fluctuations | 0.0 | 0.0 | 0.0 | 0.0 |
| Lack of/inadequate gear | 32.4 | 28.4 | 53.8 | 31.3 |
| Lack of engine/fuel | 0.0 | 0.0 | 0.0 | 0.0 |
| Lack of/poor processing facilities | 0.0 | 0.0 | 0.0 | 0.0 |
| Transport problems (to market) | 0.0 | 0.0 | 0.0 | 0.0 |
| Problems with industrial companies | 0.0 | 1.1 | 0.0 | 0.0 |
| Lack of /inadequate regulations | 0.0 | 0.0 | 0.0 | 0.0 |
| Excessive regulationa | 0.0 | 0.0 | 0.0 | 0.0 |
| Excessive fees/taxes/levies | 0.0 | 0.0 | 3.8 | 0.0 |
| Lack of Gov't aid | 0.0 | 0.0 | 0.0 | 0.0 |
| Weather conditions | 0.0 | 0.0 | 0.0 | 0.0 |
| Presence of foreigners | 0.0 | 0.0 | 0.0 | 0.0 |
| Safety problems/poor working conditions | 0.0 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 171) | 34 | 95 | 26 | 16 |
| Missing cases | 0 | 2 | 0 | 1 |

**Table 3.24a Second most serious occupational problem cited, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Lack of security | 12.8 | 16.8 | 23.9 | 21.1 |
| Low catches/profit | 15.4 | 12.4 | 13.0 | 10.5 |
| Seasonal fluctuations | 0.0 | 1.5 | 0.0 | 0.0 |
| Lack of/inadequate gear | 56.4 | 57.7 | 50.0 | 52.6 |
| Lack of engine/fuel | 0.0 | 0.0 | 0.0 | 0.0 |
| Lack of/poor processing facilities | 0.0 | 0.0 | 0.0 | 0.0 |
| Transport problems (to market) | 5.1 | 5.1 | 2.2 | 5.3 |
| Problems with industrial companies | 2.6 | 1.5 | 2.2 | 0.0 |
| Lack of /inadequate regulations | 0.0 | 0.0 | 0.0 | 5.3 |
| Excessive regulationa | 2.6 | 4.4 | 6.5 | 5.3 |
| Excessive fees/taxes/levies | 5.1 | 0.7 | 0.0 | 0.0 |
| Lack of Gov't aid | 0.0 | 0.0 | 2.2 | 0.0 |
| Weather conditions | 0.0 | 0.0 | 0.0 | 0.0 |
| Presence of foreigners | 0.0 | 0.0 | 0.0 | 0.0 |
| Safety problems/poor working conditions | 0.0 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 241) | 39 | 137 | 46 | 19 |
| Missing cases | 6 | 38 | 9 | 7 |

**Table 3.24b Second most serious occupational problem cited, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| Lack of security | 23.3 | 19.0 | 21.1 | 9.1 |
| Low catches/profit | 13.3 | 7.6 | 5.3 | 9.1 |
| Seasonal fluctuations | 0.0 | 0.0 | 0.0 | 0.0 |
| Lack of/inadequate gear | 46.7 | 58.2 | 57.9 | 72.7 |
| Lack of engine/fuel | 0.0 | 1.3 | 0.0 | 0.0 |
| Lack of/poor processing facilities | 0.0 | 1.3 | 0.0 | 0.0 |
| Transport problems (to market) | 0.0 | 2.5 | 0.0 | 9.1 |
| Problems with industrial companies | 0.0 | 0.0 | 0.0 | 0.0 |
| Lack of /inadequate regulations | 3.3 | 0.0 | 0.0 | 0.0 |
| Excessive regulationa | 3.3 | 7.6 | 0.0 | 0.0 |
| Excessive fees/taxes/levies | 0.0 | 0.0 | 15.8 | 0.0 |
| Lack of Gov't aid | 10.0 | 2.5 | 0.0 | 0.0 |
| Weather conditions | 0.0 | 0.0 | 0.0 | 0.0 |
| Presence of foreigners | 0.0 | 0.0 | 0.0 | 0.0 |
| Safety problems/poor working conditions | 0.0 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 139) | 30 | 79 | 19 | 11 |
| Missing cases | 4 | 18 | 7 | 6 |

## 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 recognized that there was no basis for estimating total numbers of local fish processors and traders beforehand, the Tanzanian survey team keyed its processor/trader sampling rate to the fishing unit rate (Reynolds and Paffen 1997b). This in effect established a quota of 185 post-harvest operators to be interviewed -- 117 in Kigoma Region and 68 in Rukwa Region, with their distribution throughout the sample sites being dictated by the distribution of sample fishing units. In the event, the team was able to make contact with 177 of the projected total -- 119 in Kigoma Region and 58 in Rukwa Region.

The resulting post-harvest sector sample group in Kigoma is mostly composed of those who practice both fish processing and trading together, as opposed to specialising in either one or the other (Table 4.1a). The sample group in Rukwa is more specialised, mainly in processing (Table 4.1b). During the survey it proved harder to locate post-harvest respondents in Rukwa because they tend to travel around, buying fish from different villages for export purposes. As the sample respondents in both regions mainly consist of either processors or processor/traders, it is not surprising to find that their range of business tends to stay within a 5 km radius of their landing site bases (Tables 4.2a-b).

**Table 4.1a Post-harvest sample respondents by enterprise type, Kigoma Region, Tanzania.**

| Main enterprise type | Respondents per type | |
|---|---|---|
| | No. | % |
| **Processing (rarely trades)** | 30 | 25.2 |
| **Processing + trading** | 67 | 56.3 |
| **Trading (rarely processes)** | 22 | 18.5 |
| **Total cases** | **119** | 100.0 |

**Table 4.1b Post-harvest sample respondents by enterprise type, Rukwa Region, Tanzania.**

| Main enterprise type | Respondents per type | |
|---|---|---|
| | No. | % |
| Processing (rarely trades) | 40 | 69.0 |
| Processing + trading | 3 | 5.2 |
| Trading (rarely processes) | 15 | 25.9 |
| Total cases | 58 | 100.0 |

**Table 4.2a Post-harvest sample respondents by area of operation, Kigoma Region, Tanzania.**

| Area of operation | Processors + traders |
|---|---|
| Local (5 km radius) % | 57.1 |
| Non-local (>5 km radius) % | 14.3 |
| Both local & non-local % | 28.6 |
| Total % | 100.0 |
| Total cases (N) | 119 |

**Table 4.2b Post-harvest sample respondents by area of operation, Rukwa Region, Tanzania.**

| Area of operation | Processors + traders |
|---|---|
| Local (5 km radius) % | 67.2 |
| Non-local (>5 km radius) % | 15.5 |
| Both local & non-local % | 17.2 |
| Total % | 100.0 |
| Total cases (N) | 58 |

## 4.2 Processor/Trader Respondent Background Characteristics

### 4.2.1 Gender, age, and formal education

Most of the 177 members of the post-harvest sample group for Tanzania are male (60% and 69% in Kigoma and Rukwa regions respectively -- Tables 4.3a-b). Sample characteristics in terms of age and formal education attained are displayed in Tables 4.4a-b and 4.5a-b respectively. The age structure of the two gender sub-groups are quite similar in Kigoma. Almost 5 in 10 individuals, female or male, are under 30 years old; a little over 8 in 10 are under 40 years. In Rukwa, the age structures of the two sub-groups are quite different. The sampled females are mainly young women, more than 5 in 10 being 25 years or younger. Their male counterparts are mostly in 30 to 40 year age range.

**Table 4.3a Post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Gender | Processors | Proc./traders | Traders | Combined |
|---|---|---|---|---|
| **Male %** | 66.7 | 53.7 | 68.2 | 59.7 |
| **Female %** | 33.3 | 46.3 | 31.8 | 40.3 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 30 | 67 | 22 | 119 |

**Table 4.3b Post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Gender | Processors | Proc./traders | Traders | Combined |
|---|---|---|---|---|
| **Male %** | 67.5 | 100.0 | 66.7 | 69.0 |
| **Female %** | 32.5 | 0.0 | 33.3 | 31.0 |
| **Total %** | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 40 | 3 | 15 | 58 |

**Table 4.4a Age structure of post -harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Age range (yrs) | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | % | Cum% | % | Cum% | % | Cum% |
| **<15** | 2.1 | 2.1 | 0.0 | 0.0 | 0.8 | 0.8 |
| **15 - 18** | 4.2 | 6.3 | 2.8 | 2.8 | 3.4 | 4.2 |
| **19 - 21** | 4.2 | 10.4 | 16.9 | 19.7 | 11.8 | 16.0 |
| **22 - 25** | 20.8 | 31.3 | 15.5 | 35.2 | 17.6 | 33.6 |
| **26 - 29** | 14.6 | 45.8 | 14.1 | 49.3 | 14.3 | 47.9 |
| **30 - 39** | 39.6 | 85.4 | 35.2 | 84.5 | 37.0 | 84.9 |
| **40 - 49** | 10.4 | 95.8 | 15.5 | 100.0 | 13.4 | 98.3 |
| **50 - 59** | 2.1 | 97.9 | 0.0 | 100.0 | 0.8 | 99.2 |
| **>59** | 2.1 | 100.0 | 0.0 | 100.0 | 0.8 | 100.0 |
| **Total** | 100.0 | | 100.0 | | 100.0 | |
| **Total cases** (N = 119) | 48 | | 71 | | 119 | |

**Table 4.4b Age structure of post -harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Age range (yrs) | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | % | Cum% | % | Cum% | % | Cum% |
| **<15** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **15 - 18** | 5.6 | 5.6 | 2.5 | 2.5 | 3.4 | 3.4 |
| **19 - 21** | 16.7 | 22.2 | 12.5 | 15.0 | 13.8 | 17.2 |
| **22 - 25** | 33.3 | 55.6 | 15.0 | 30.0 | 20.7 | 37.9 |
| **26 - 29** | 16.7 | 72.2 | 7.5 | 37.5 | 10.3 | 48.3 |
| **30 - 39** | 22.2 | 94.4 | 42.5 | 80.0 | 36.2 | 84.5 |
| **40 - 49** | 5.6 | 100.0 | 12.5 | 92.5 | 10.3 | 94.8 |
| **50 - 59** | 0.0 | 100.0 | 5.0 | 97.5 | 3.4 | 98.3 |
| **>59** | 0.0 | 100.0 | 2.5 | 100.0 | 1.7 | 100.0 |
| **Total** | 100.0 | | 100.0 | | 100.0 | |
| **Total cases** (N = 58) | 18 | | 40 | | 58 | |

Marked gender-based differences are also apparent in terms of formal education achievements in Kigoma Region. Whilst some 79% of males have attained a primary school certificate, the corresponding figure for women is only about 46%. And whereas around 11% of male respondents in Kigoma have obtained secondary school certificates, none of the female respondents have done

so. In Rukwa Region gender-based educational attainment differences are far less striking at the primary level. Some 76% of male respondents report holding a primary school certificate, as against some 61% of the women. . But Rukwa women respondents report possession of a secondary certificate at a rate of 11.1%, compared with only about 3% for the men.

**Table 4.5a Formal education certificate level, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Primary School Certificate | Female | Male | Total |
|---|---|---|---|
| 'No' %. | 54.2 | 21.1 | 34.5 |
| 'Yes' %. | 45.8 | 78.9 | 65.5 |
| Total% | 100.0 | 100.0 | 100.0 |
| Total cases (N= 119) | 48 | 71 | 119 |
| **Secondary School Certificate** | | | |
| 'No' % | 100.0 | 88.7 | 93.3 |
| 'Yes' %. | 0.0 | 11.3 | 6.7 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 119) | 48 | 71 | 119 |

**Table 4.5b Formal education certificate level, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Primary School Certificate | Female | Male | Total |
|---|---|---|---|
| 'No' %. | 38.9 | 22.5 | 27.6 |
| 'Yes' %. | 61.1 | 77.5 | 72.4 |
| Total% | 100.0 | 100.0 | 100.0 |
| Total cases (N= 58) | 18 | 40 | 58 |
| **Secondary School Certificate** | | | |
| 'No' % | 88.9 | 97.5 | 94.8 |
| 'Yes' %. | 1.1 | 2.5 | 5.2 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 58) | 18 | 40 | 58 |

### 4.2.2 Marital Status and Dependents

Data on marital status and dependents presented in Tables 4.6a-b and 4.7a-b confirm the post-harvest sample as a group of generally mature individuals with spouse and family obligations. In Kigoma, around 7 in 10 are married, and more the 8 in 10 report that they bear responsibility for support of one or more dependents. For Rukwa, the difference in the age structure between female and male respondents seems to be reflected in the marital status data. Only half of the women are married as compared with more than 80% of the men. Also, more men report the presence of dependents to support as compared to the women (90% and 78%, respectively).

**Table 4.6a Marital status, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Marital status | Female | Male | Total |
|---|---|---|---|
| **Not married %** | 22.9 | 31.0 | 27.7 |
| **Married %** | 77.1 | 69.0 | 72.3 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N= 119) | 48 | 71 | 119 |

**Table 4.6b Marital status, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Marital status | Female | Male | Total |
|---|---|---|---|
| **Not married %** | 50.0 | 17.5 | 27.6 |
| **Married %** | 50.0 | 82/5 | 72.4 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N= 58) | 18 | 40 | 58 |

**Table 4.7a Dependents reported, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Any dependents | Female | Male | Total |
|---|---|---|---|
| **'No' %** | 6.3 | 18.3 | 13.4 |
| **'Yes' %** | 93.8 | 81.7 | 86.6 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N= 119) | 48 | 71 | 119 |

**Table 4.7b Dependents reported, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Any dependents | Female | Male | Total |
|---|---|---|---|
| **'No' %** | 22.2 | 10.0 | 13.8 |
| **'Yes' %** | 77.8 | 90.0 | 86.2 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** | 18 | 40 | 58 |
| (N= 58) | | | |

### 4.2.3 Place of birth and reasons for migration

Reference to Tables 4.8a-b shows that around half of the post-harvest group respondents in both regions originate from elsewhere. Of those respondents in Kigoma who were born elsewhere, 'return to original family place' (place of parents' birth) is cited by two-thirds of females as the reason for migration to sample landing sites (Table 4.9a). In a bit less then half of the cases male respondents report moving to the sample site in order to engage in the fish business; otherwise migration is linked either to 'return to original family place,' 'searching for better conditions,' or 'security reasons.' In Rukwa Region both female and male respondents most frequently report migrating to their present place of residence in order to engage in the fish business. Desire to return to one's original family place and searching for better conditions are also cited as main reasons (Table 4.9b).

**Table 4.8a Reported place of birth, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Place of birth | Female | Male | Total |
|---|---|---|---|
| **At site/vicinity %** | 37.5 | 43.7 | 41.2 |
| **Within 50 km %** | 8.3 | 2.8 | 5.0 |
| **Beyond 50 km %** | 54.2 | 53.5 | 53.8 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** | 48 | 71 | 119 |
| (N= 119) | | | |

**Table 4.8b Reported place of birth, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Place of birth | Female | Male | Total |
|---|---|---|---|
| **At site/vicinity %** | 44.4 | 32.5 | 36.2 |
| **Within 50 km %** | 0.0 | 17.5 | 12.1 |
| **Beyond 50 km %** | 55.6 | 50.0 | 51.7 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** | 18 | 40 | 58 |
| (N= 58) | | | |

**Table 4.9a Reported reason for migration to site, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Reason for migration | Female | Male | Total |
|---|---|---|---|
| 'Original family place' % | 60.0 | 20.5 | 37.7 |
| 'With family/relatives' % | 10.0 | 5.1 | 7.2 |
| 'For fishing/fish trading' % | 6.7 | 43.6 | 27.5 |
| 'For farming' % | 0.0 | 0.0 | 0.0 |
| 'For better conditions' % | 6.7 | 10.3 | 8.7 |
| 'For security reasons/refugee' % | 10.0 | 12.8 | 11.6 |
| 'Other' % | 6.7 | 7.7 | 7.2 |
| Total | 100.0 | 100.0 | 100.0 |
| Total cases 'Not born here' (n = 69 ) | 30 | 39 | 69 |
| Missing cases | 0 | 1 | 1 |

**Table 4.9b Reported reason for migration to site, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Reason for migration | Female | Male | Total |
|---|---|---|---|
| 'Original family place' % | 40.0 | 22.2 | 27.0 |
| 'With family/relatives' % | 0.0 | 3.7 | 2.7 |
| 'For fishing/fish trading' % | 40.0 | 44.4 | 43.2 |
| 'For farming' % | 0.0 | 0.0 | 0.0 |
| 'For better conditions' % | 20.0 | 29.6 | 27.0 |
| 'For security reasons/refugee' % | 0.0 | 0.0 | 0.0 |
| 'Other' % | 0.0 | 0.0 | 0.0 |
| Total | 100.0 | 100.0 | 100.0 |
| Total cases 'Not born here' (n = 37 ) | 10 | 27 | 37 |
| Missing cases | 0 | 0 | 0 |

## 4.3 Post-harvest Enterprise and Income Status

Almost all respondents in Kigoma Region 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 4.10a). In Rukwa likewise by far the greatest proportion of sample post-harvest respondents are involved full-

time in their work, although a small group of around 12% claim only part-time involvement in fish processing/trading (Table 4.10b).

**Table 4.10a Extent participation in fish business, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Participation | Female | Male | Total |
|---|---|---|---|
| **Full time %** | 100.0 | 97.2 | 98.3 |
| **Part time %** | 0.0 | 2.8 | 1.7 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Report cases** (N = 119) | 48 | 71 | 119 |

**Table 4.10b Extent participation in fish business, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Participation | Female | Male | Total |
|---|---|---|---|
| **Full time %** | 88.9 | 87.5 | 87.9 |
| **Part time %** | 11.1 | 12.5 | 12.1 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Report cases** (N = 58) | 18 | 40 | 58 |

Men in both regions lead women in terms of years of work experience (Tables 4.11a-b), but the differences between the two sub-groups is slight.

**Table 4.11a Years involvement in fish processing/trading, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Year range | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | % | Cum % | % | Cum % | % | Cum % |
| **<1** | 12.5 | 12.5 | 8.5 | 8.5 | 10.1 | 10.1 |
| **1 - 2** | 16.7 | 29.2 | 14.1 | 22.6 | 15.1 | 25.2 |
| **3 - 5** | 37.5 | 66.7 | 26.8 | 49.4 | 31.1 | 56.3 |
| **6 - 10** | 20.8 | 87.5 | 29.6 | 79.0 | 26.1 | 82.4 |
| **>10** | 12.5 | 100.0 | 21.0 | 100.0 | 17.6 | 100.0 |
| **Total** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Report cases** (N = 119) | 48 | | 71 | | 119 | |

**Table 4.11b Years involvement in fish processing/trading, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Year range | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | % | Cum % | % | Cum % | % | Cum % |
| **<1** | 11.1 | 11.1 | 5.0 | 5.0 | 6.9 | 6.9 |
| **1 - 2** | 11.1 | 22.2 | 17.5 | 22.5 | 15.5 | 22.4 |
| **3 - 5** | 50.0 | 72.2 | 30.0 | 52.5 | 36.2 | 58.6 |
| **6 - 10** | 16.7 | 88.9 | 32.5 | 85.0 | 27.6 | 86.2 |
| **>10** | 11.1 | 100.0 | 15.0 | 100.0 | 13.8 | 100.0 |
| **Total** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Report cases** (N = 58) | 18 | | 40 | | 58 | |

'Full-time' fish processing or trading employment may also be supplemented by other forms of work, especially in farming. As shown by Tables 4.12a-b, around three-quarters of all women post-harvest respondents are involved in subsistence (food production) farming. The corresponding rates for men are about 37% in Kigoma and 63% in Rukwa. In both regions small fractions of men report practising a combination of food crop-cash crop farming enterprise. Rates of male involvement in farming may actually be somewhat higher since the 'More than one other job' category in the tables masks the incidence of farming by those who claim two or more forms of secondary employment. In any event, farming typical to the area is very small scale, and largely confined to family plots. Like their fisher sample counterparts, respondents in the post-harvest group usually own at least some land (Tables 4.13-b).

**Table 4.12a Involvement in other work, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Other work | Female | Male | Total |
|---|---|---|---|
| **Subsistence farming %** | 75.0 | 36.6 | 52.1 |
| **Subsis. + Cash farming %** | 0.0 | 14.1 | 8.4 |
| **Fishing %** | 0.0 | 16.9 | 10.1 |
| **Labourer`%** | 0.0 | 0.0 | 0.0 |
| **Salary job %** | 0.0 | 0.0 | 0.0 |
| **Business %** | 0.0 | 1.4 | 0.8 |
| **More than one other job %** | 0.0 | 4.2 | 2.5 |
| **No other job %** | 25.0 | 26.8 | 26.1 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Report cases** (N = 119) | 48 | 71 | 119 |

**Table 4.12b Involvement in other work, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Other work | Female | Male | Total |
|---|---|---|---|
| Subsistence farming % | 77.8 | 62.5 | 67.2 |
| Subsis. + Cash farming % | 0.0 | 5.0 | 3.4 |
| Fishing % | 0.0 | 17.5 | 12.1 |
| Labourer`% | 0.0 | 0.0 | 0.0 |
| Salary job % | 0.0 | 0.0 | 0.0 |
| Business % | 0.0 | 0.0 | 0.0 |
| More than one other job % | 0.0 | 7.5 | 5.2 |
| No other job % | 22.2 | 7.5 | 12.1 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 58) | 18 | 40 | 58 |

**Table 4.13a Reported ownership of land, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Any land ownership | Female | Male | Total |
|---|---|---|---|
| 'No' % | 25.0 | 36.6 | 31.9 |
| 'Yes' % | 75.0 | 63.4 | 68.1 |
| Total | 100.0 | 100.0 | 100.0 |
| Report cases (N = 119) | 48 | 71 | 119 |

**Table 4.13b Reported ownership of land, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Any land ownership | Female | Male | Total |
|---|---|---|---|
| 'No' % | 38.9 | 15.0 | 22.4 |
| 'Yes' % | 61.1 | 85.0 | 77.6 |
| Total | 100.0 | 100.0 | 100.0 |
| Report cases (N = 58) | 18 | 40 | 58 |

In the same manner as for the fisher sample, indicative income information was collected from the post-harvest group respondents. This is compiled in Tables 4.14a-b for 'good'

months of work and in Tables 4.15a-b for ‘poor’ months of work. Figures are again given in US$ equivalents of those reported in local currency amounts during interviews.

In general women report that they earn less than their male counterparts during ‘good’ months. There are no women in either region who report earnings of more then US$ 200/month, whereas almost 10% of the male respondents in Kigoma Region and 15% of those Rukwa region confirm earning such amounts.

Kigoma Region respondents overall report lower ‘poor’ month incomes than do Rukwa respondents. More then 80% of Kigoma females and more then 60% of males cite ‘poor’ month earnings of less then US$ 10; in Rukwa less then 40% females and exactly 25% male respondents confirm ‘poor’ month earnings at this level.

**Table 4.14a Estimated income during ‘good’ months, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Income range (US$/mo)* | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | % | Cum% | % | Cum% | % | Cum% |
| **< 25** | 50.0 | 50.0 | 21.1 | 21.1 | 32.8 | 32.8 |
| **25 - 50** | 39.6 | 89.6 | 21.1 | 42.3 | 28.6 | 61.3 |
| **51 - 100** | 6.3 | 95.8 | 25.4 | 67.6 | 17.6 | 79.0 |
| **101 - 200** | 4.2 | 100.0 | 23.9 | 91.5 | 16.0 | 95.0 |
| **> 200** | 0.0 | 100.0 | 8.5 | 100.0 | 5.0 | 100.0 |
| **Total** | 100.0 | | 100.0 | | 100.0 | |
| **Report cases** (N = 119) | 48 | | 71 | | 119 | |

* Exchange rate of US$ 1 = Tanzanian Shs. 600 applies.

**Table 4.14b Estimated income during ‘good’ months, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Income range (US$/mo)* | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | % | Cum% | % | Cum% | % | Cum% |
| **< 25** | 22.2 | 22.2 | 5.0 | 5.0 | 10.3 | 10.3 |
| **25 - 50** | 11.1 | 33.3 | 30.0 | 35.0 | 24.1 | 34.5 |
| **51 - 100** | 33.3 | 66.7 | 25.0 | 60.0 | 27.6 | 62.1 |
| **101 - 200** | 33.3 | 100.0 | 25.0 | 85.0 | 27.6 | 89.7 |
| **> 200** | 0.0 | 100.0 | 15.0 | 100.0 | 10.3 | 100.0 |
| **Total** | 100.0 | | 100.0 | | 100.0 | |
| **Report cases** (N = 58) | 18 | | 40 | | 58 | |

* Exchange rate of US$ 1 = Tanzanian Shs. 600 applies.

**Table 4.15a Estimated income during 'poor' months, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Income range (US$/mo)* | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | % | Cum% | % | Cum% | % | Cum% |
| **< 10** | 81.3 | 81.3 | 62.0 | 62.0 | 69.7 | 69.7 |
| **10 - 20** | 16.7 | 97.9 | 11.3 | 73.2 | 13.4 | 83.2 |
| **21 - 50** | 2.1 | 100.0 | 15.5 | 88.7 | 10.1 | 93.3 |
| **51 - 100** | 0.0 | 100.0 | 7.0 | 95.8 | 4.2 | 97.5 |
| **> 100** | 0.0 | 100.0 | 4.2 | 100.0 | 2.5 | 100.0 |
| **Total** | 100.0 | | 100.0 | | 100.0 | |
| **Report cases** (N = 119) | 48 | | 71 | | 119 | |

* Exchange rate of US$ 1 = Tanzanian Shs. 600 applies.

**Table 4.15b Estimated income during 'poor' months, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Income range (US$/mo)* | Female | | Male | | Total | |
|---|---|---|---|---|---|---|
| | % | Cum% | % | Cum% | % | Cum% |
| **< 10** | 38.9 | 38.9 | 25.0 | 25.0 | 29.3 | 29.3 |
| **10 - 20** | 11.1 | 50.0 | 25.0 | 50.0 | 20.7 | 50.0 |
| **21 - 50** | 22.2 | 72.2 | 25.0 | 75.0 | 24.1 | 74.1 |
| **51 - 100** | 27.8 | 100.0 | 22.5 | 97.5 | 24.1 | 98.3 |
| **> 100** | 0.0 | 100.0 | 2.5 | 100.0 | 1.7 | 100.0 |
| **Total** | 100.0 | | 100.0 | | 100.0 | |
| **Report cases** (N = 58) | 18 | | 40 | | 58 | |

* Exchange rate of US$ 1 = Tanzanian Shs. 600 applies.

### 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 group respondents of both sexes in both regions seem very strongly inclined to stick with their present line of work (Tables 4.16a-b), though just under 30% of the respondents from Rukwa region claim a preference for operating out of some other location than their present one (Tables 4.17a-b).

**Table 4.16a Stated preference for continuing in fish processing/trading, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Preference to continue? | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 93.8 | 90.1 | 91.6 |
| 'No' % | 6.3 | 9.9 | 8.4 |
| 'No opinion' % | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 119) | 48 | 71 | 119 |

**Table 4.16b Stated preference for continuing in fish processing/trading, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Preference to continue? | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 83.3 | 80.0 | 81.0 |
| 'No' % | 16.7 | 20.0 | 19.0 |
| 'No opinion' % | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 58) | 18 | 40 | 58 |

**Table 4.17a Stated preference for staying in present location, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Preference to stay? | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 89.6 | 81.7 | 84.9 |
| 'No' % | 10.4 | 16.9 | 14.3 |
| 'No opinion' % | 0.0 | 1.4 | 0.8 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 119) | 48 | 71 | 119 |

**Table 4.17b Stated preference for staying in present location, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Preference to stay? | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 66.7 | 67.3 | 67.2 |
| 'No' % | 27.8 | 30.0 | 29.3 |
| 'No opinion' % | 5.6 | 2.5 | 3.4 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 58) | 18 | 40 | 58 |

As with the fishers, members of the post-harvest sample group in Tanzania was 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 are tabulated below for the first and second preference levels only (Tables 4.18a-b), as many of the informants in both regions mentioned no third preference. First and second preference of female respondents in Kigoma region both reflect the wish to invest earnings in either processing and trading or in farming. The male respondents in Kigoma region appear to give family welfare purposes highest priority. Family welfare also figures prominently at both first and second level preferences for both sexes in Rukwa.

**Table 4.18a Stated preferences for use of one year's savings, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| First stated preference | Female | Male | Total |
|---|---|---|---|
| Fishing gear % | 6.3 | 19.7 | 14.3 |
| Fishing lamps % | 0.0 | 0.0 | 0.0 |
| Boat % | 2.1 | 0.0 | 0.8 |
| O/B Engine % | 0.0 | 0.0 | 0.0 |
| Invest processing/trading % | 62.5 | 25.4 | 40.3 |
| Invest farming % | 6.3 | 7.0 | 6.7 |
| Invest business/shop % | 6.3 | 5.6 | 5.9 |
| Family welfare/purposes % | 14.6 | 40.8 | 30.3 |
| Other % | 2.1 | 1.4 | 1.7 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 119) | 48 | 71 | 119 |

| Second stated preference | Female | Male | Total |
|---|---|---|---|
| Fishing gear % | 11.8 | 18.2 | 16.0 |
| Fishing lamps % | 0.0 | 0.0 | 0.0 |
| Boat % | 0.0 | 1.5 | 1.0 |
| O/B Engine % | 0.0 | 1.5 | 1.0 |
| Invest processing/trading % | 20.6 | 18.2 | 19.0 |
| Invest farming % | 26.5 | 12.1 | 17.0 |
| Invest business/shop % | 14.7 | 12.1 | 13.0 |
| Family welfare/purposes % | 20.6 | 31.8 | 28.0 |
| Other % | 5.9 | 4.5 | 5.0 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (n = 100) | 34 | 66 | 100 |
| No second preference | 14 | 5 | 19 |

**Table 4.18b Stated preferences for use of one year's savings, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| First stated preference | Female | Male | Total |
|---|---|---|---|
| Fishing gear % | 33.3 | 22.5 | 25.9 |
| Fishing lamps % | 0.0 | 0.0 | 0.0 |
| Boat % | 0.0 | 0.0 | 0.0 |
| O/B Engine % | 0.0 | 0.0 | 0.0 |
| Invest processing/trading % | 11.1 | 2.5 | 5.2 |
| Invest farming % | 5.6 | 7.5 | 6.9 |
| Invest business/shop % | 5.6 | 5.0 | 5.2 |
| Family welfare/purposes % | 44.4 | 57.5 | 53.4 |
| Other % | 0.0 | 5.0 | 3.4 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 58) | 18 | 40 | 58 |
| **Second stated preference** | **Female** | **Male** | **Total** |
| Fishing gear % | 7.1 | 25.0 | 20.0 |
| Fishing lamps % | 0.0 | 0.0 | 0.0 |
| Boat % | 14.3 | 0.0 | 4.0 |
| O/B Engine % | 14.3 | 5.6 | 8.0 |
| Invest processing/trading % | 14.3 | 16.7 | 16.0 |
| Invest farming % | 0.0 | 16.7 | 12.0 |
| Invest business/shop % | 14.3 | 8.3 | 10.0 |
| Family welfare/purposes % | 35.7 | 27.8 | 30.0 |
| Other % | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (n = 100) | 14 | 36 | 50 |
| No second preference | 4 | 4 | 8 |

### 4.4.2 State of resources and use rights

***Perceived state of commercial fish stocks***

Fish processors/traders surveyed in Tanzania appear as a group to be quite negative in remarking on changes in the fishery over recent years, but are more uncertain of what to

expect within the near future. Almost 90% of the Kigoma post-harvest sample group are of the opinion that catches have declined from the time they first became involved in the fish business (Table 4.19a). For Rukwa, almost 70% hold this opinion (Table 4.19b).

**Table 4.19a View of catches compared to when first started in fish business, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Change from when first started? | Female | Male | Total |
|---|---|---|---|
| 'Increase' % | 2.1 | 7.0 | 5.0 |
| 'Decrease' % | 91.7 | 85.9 | 88.2 |
| 'Similar' % | 4.2 | 2.8 | 3.4 |
| 'No opinion' % | 2.1 | 4.2 | 3.4 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 119) | 48 | 71 | 119 |

**Table 4.19b View of catches compared to when first started in fish business, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Change from when first started? | Female | Male | Total |
|---|---|---|---|
| 'Increase' % | 22.2 | 17.5 | 19.0 |
| 'Decrease' % | 66.7 | 70.0 | 69.0 |
| 'Similar' % | 0.0 | 10.0 | 6.9 |
| 'No opinion' % | 11.1 | 2.5 | 5.2 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 58) | 18 | 40 | 58 |

Members of the post-harvest sample group account for their perceptions of recent catch decreases mostly on the basis of overfishing and associated stock decline, ‘Gods’ will,’ and the use of poor fishing methods (Tables 4.20a-b).

**Table 4.20a Reasons cited for catch decrease from before, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Reasons cited | Female | Male | Total |
|---|---|---|---|
| 'Don't know' % | 0.0 | 0.0 | 0.0 |
| 'God's will' % | 38.6 | 24.6 | 30.5 |
| 'Over-fishing/stock decline' % | 54.6 | 24.6 | 37.1 |
| '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' % | 6.8 | 37.7 | 24.8 |
| 'Environmental change' % | 0.0 | 13.1 | 7.6 |
| 'Regulations weak' % | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 105) | 44 | 61 | 105 |

**Table 4.20b Reasons cited for catch decrease from before, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Reasons cited | Female | Male | Total |
|---|---|---|---|
| 'Don't know' % | 0.0 | 0.0 | 0.0 |
| 'God's will' % | 66.7 | 21.5 | 35.0 |
| 'Over-fishing/stock decline' % | 8.3 | 42.9 | 32.5 |
| 'Industrial fishing' % | 0.0 | 3.6 | 2.5 |
| 'Use of small mesh sizes' % | 0.0 | 0.0 | 0.0 |
| 'Presence foreign fishers' % | 0.0 | 0.0 | 0.0 |
| 'Poor fishing methods' % | 25.0 | 17.9 | 20.0 |
| 'Environmental change' % | 0.0 | 10.7 | 7.5 |
| 'Regulations weak' % | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (n = 40) | 12 | 28 | 40 |

In terms of changes anticipated over the coming five years, most informants in Kigoma Region venture no opinion on the matter (Table 4.21a), whereas views in Rukwa are more divergent. Half of the Rukwa female respondents have no opinion and a third express the belief that catches will increase; almost half of Rukwa males look forward to declining catches, and just under a third venture no opinion (Table 4.21b).

**Table 4.21a View of catches anticipated for the next five years, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Change from when first started? | 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 = 119) | 48 | 71 | 119 |

**Table 4.21b View of catches anticipated for the next five years, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Change from when first started? | Female | Male | Total |
|---|---|---|---|
| 'Increase' % | 16.7 | 20.0 | 19.0 |
| 'Decrease' % | 33.3 | 47.5 | 43.1 |
| 'Similar' % | 0.0 | 2.5 | 1.7 |
| 'No opinion' % | 50.0 | 30.0 | 36.2 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (N = 119) | 18 | 40 | 58 |

### 4.4.2.b Views on resource use rights

Tanzanian post-harvest informants do not seem disposed to follow up on their negative evaluations of past catch trends, and their negative or uncertain views of what the future holds in store, by advocating any restriction on user access to the lake's fish resources. Figures 4.1a and 4.1b[4] show that their collective response to the most abstract version of the unrestricted access proposition, that 'everyone should be allowed to fish everywhere,' is a fairly definite vote in favour (around 70% for Kigoma and 55% for Rukwa). When the proposition is cast in terms of 'allowing everyone to fish, even outside their own administrative district,' an average of 87% sample respondents in Kigoma Region and 81% in Rukwa associate

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

themselves with it (Figs. 4.2a and 4.2b). When it is put to Kigoma respondents that 'everyone should be allowed to fish, even outside their own country,' 56% agree (Fig. 4.3a). In Rukwa Region, however, a small majority voices opposition to this latter idea (Fig. 4.3b).

**Fig. 4.1a 'Allow everyone to fish everywhere.' (Kigoma P/harvest group)**

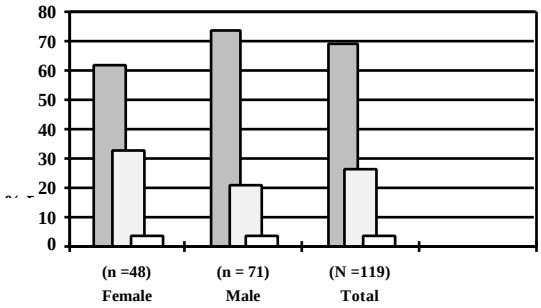



**Fig. 4.1b 'Allow everyone to fish everywhere.' (Rukwa P/harvest group)**

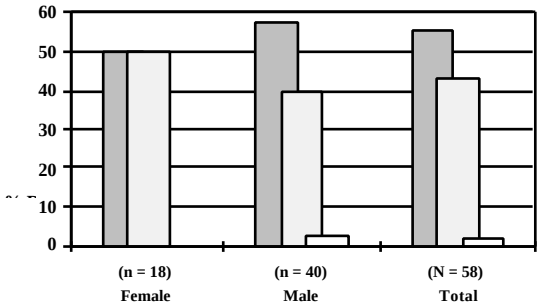



**Fig. 4.2a 'Allow people to fish outside own district.' (Kigoma P/harvest group)**

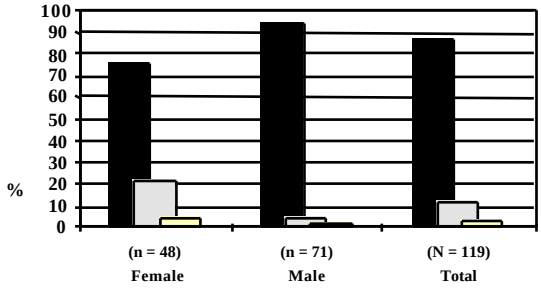



**Fig. 4.2b 'Allow people to fish outside own district.' (Rukwa P/harvest group)**

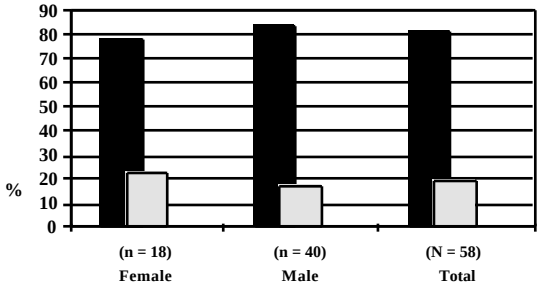



**Fig. 4.3a 'Allow people to fish outside own country. (Kigoma P/harvest group)**

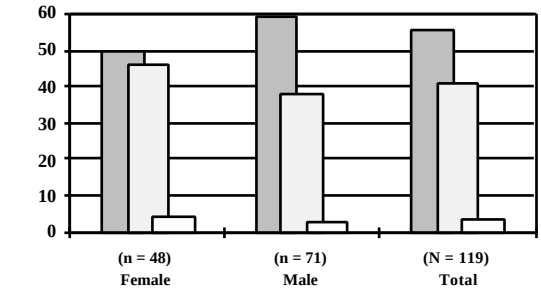



**Fig. 4.3b 'Allow people to fish outside own country. (Rukwa P/harvest group)**

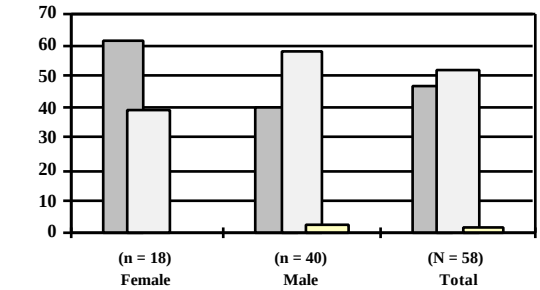



**FIGURE LEGEND**

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

The use-right proposition responses can again be seen in relation to respondents' perceptions of resource abundance in the context of data shown in Figs. 4.4a -4.4b. No strong response patterns are apparent. Kigoma post-harvest respondents as a group are almost equally divided between the 'ayes,' 'nays,' and 'no opinions' in their thinking on whether there will 'always be enough fish for everybody.' In Rukwa Region exactly half of the sample group expresses pessimism about future availability of fish, whilst the others either believe that there will be or venture no opinion on the question.

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

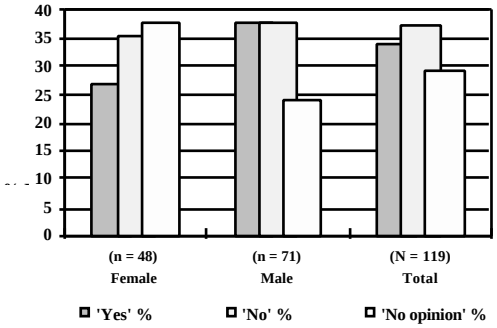
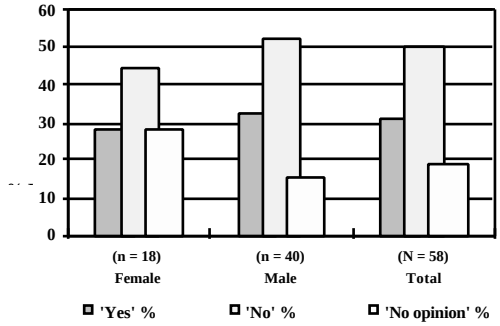



**Fig. 4.4b 'Always enough fish for everybody in future (Rukwa P/harvest group)**




## 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 (4.5a - 4.14b). Opinions vary across both gender and regional lines with regard to measures which would impose a) closed fishing periods/seasons or places/areas, and b) restrictions on beach seine or industrial fishing operations. There is strong support for control of mesh sizes in general. But strong dissent is expressed over measures which would impose restrictions on lift net operations, or any outright ban on beach seining or lift netting. Moderate majorities oppose restrictions on total numbers of fishers allowed to operate.

**Fig. 4.5a 'Closed fishing seasons/times. (Kigoma P/harvest group)**

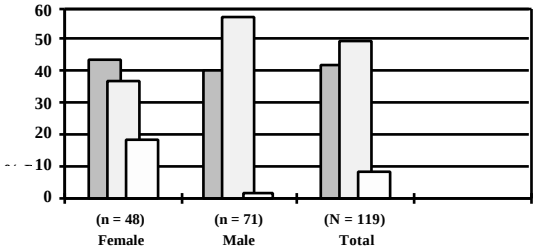



**Fig. 4.5b 'Closed fishing seasons/times. (Rukwa P/harvest group)**

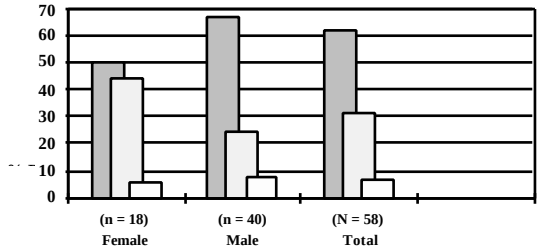



**Fig. 4.6a 'Closed fishing areas/places.' (Kigoma P/harvest group)**

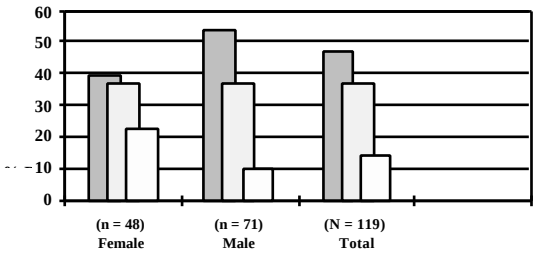



**Fig. 4.6b 'Closed fishing areas/places.' (Rukwa P/harvest group)**

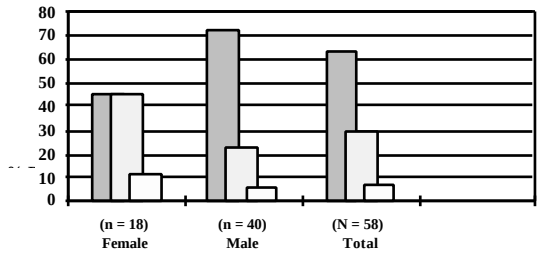



**FIGURE LEGEND**

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

**Fig. 4.7a 'Restriction on number of fishers.'**
**(Kigoma P/harvest group)**

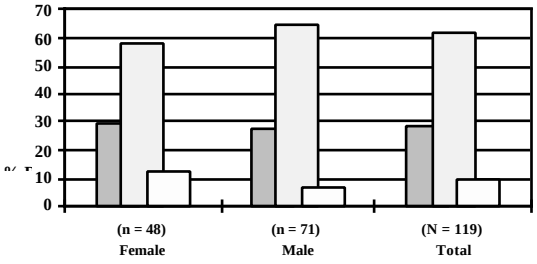



**Fig. 4.7b 'Restriction on number of fishers.'**
**(Rukwa P/harvest group)**

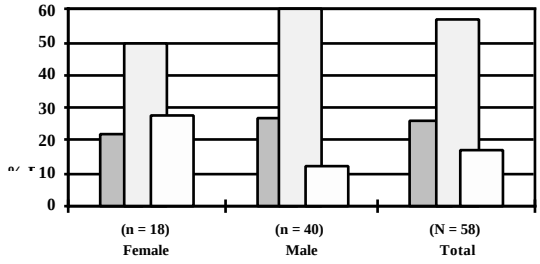



**Fig. 4.8a 'Restriction on mesh sizes.'**
**(Kigoma P/harvest group)**

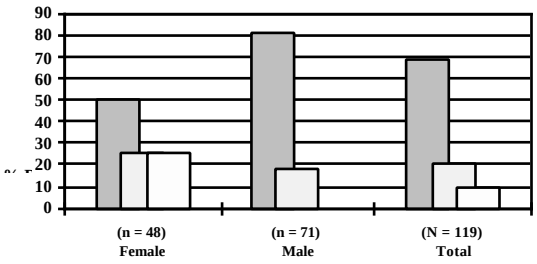



**Fig. 4.8b 'Restriction on mesh sizes.'**
**(Rukwa P/harvest group)**

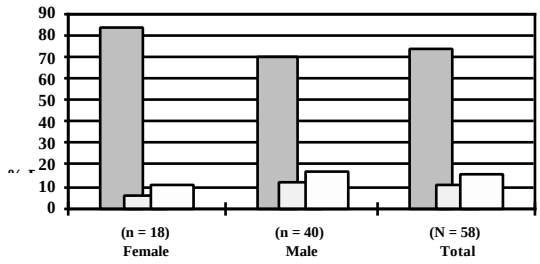



**Fig. 4.9a 'Restriction on industrial gear.'**
**(Kigoma P/harvest group)**

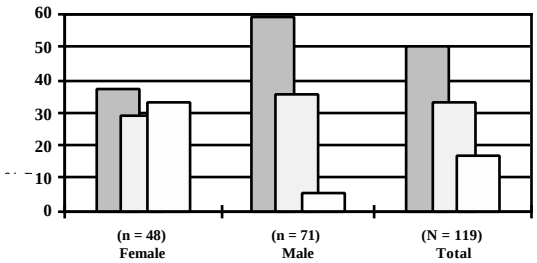



**Fig. 4.9b 'Restriction on industrial gear.'**
**(Rukwa P/harvest group)**

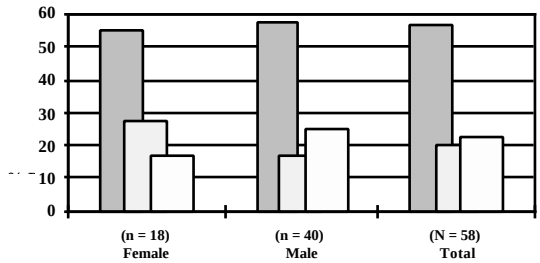



**Fig. 4.10a 'Prohibition on industrial gear.**
**(Kigoma P/harvest group)**

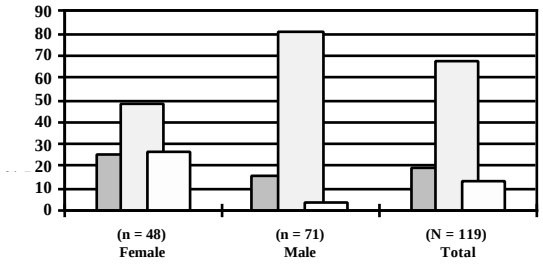



**Fig. 4.10b 'Prohibition on industrial gear.'**
**(Rukwa P/harvest group)**

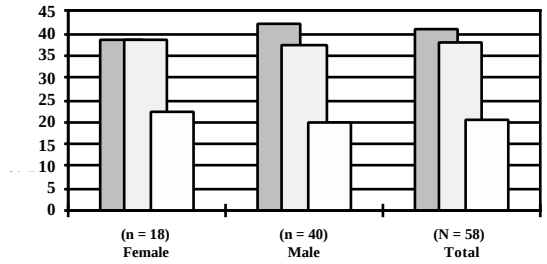



**FIGURE LEGEND**

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

**Fig. 4.11a 'Restriction on beach seines.'**
**(Kigoma P/harvest group)**

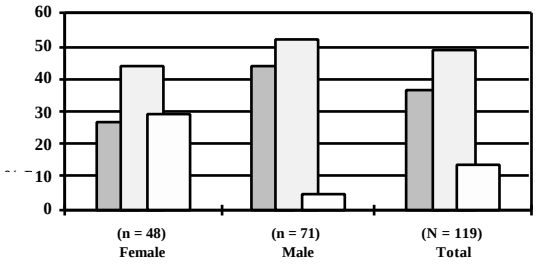



**Fig. 4.11b 'Restriction on beach seines.'**
**(Rukwa P/harvest group)**

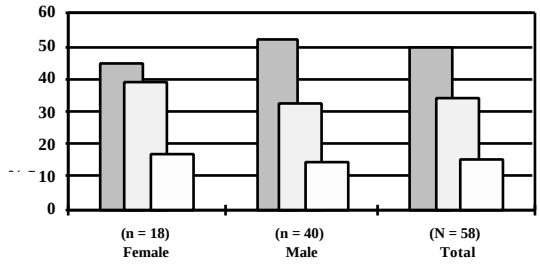



**Fig. 4.12a 'Prohibition on beach seines.'**
**(Kigoma P/harvest group)**

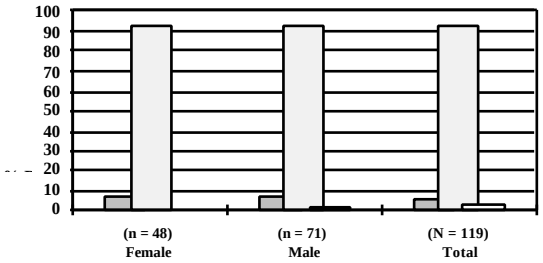



**Fig. 4.12b 'Prohibition on beach seines.**
**(Rukwa P/harvest group)**

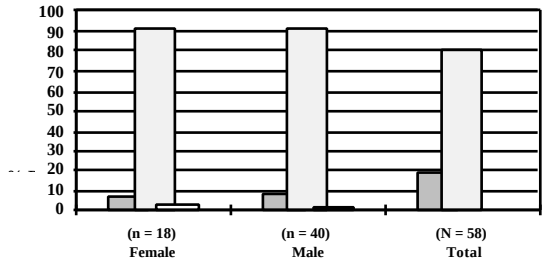



**Fig. 3.13a 'Restriction on lift nets.'**
**(Kigoma P/harvest group)**

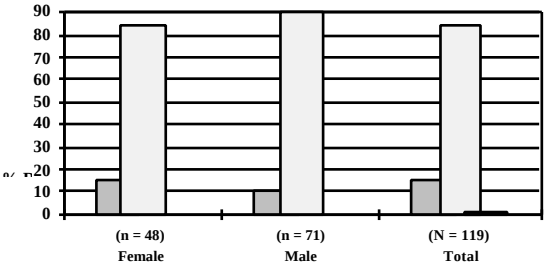



**Fig. 4.13b 'Restriction on lift nets.'**
**(Rukwa P/harvest group)**

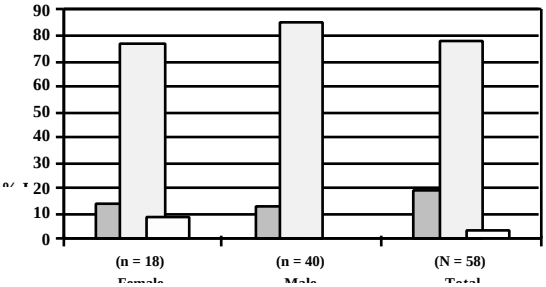



**Fig. 4.14a 'Prohibition on lift nets.**
**(Kigoma P/harvest group)**

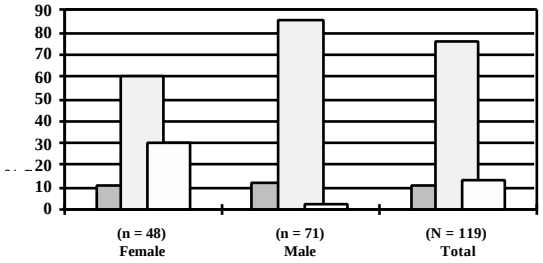



**Fig. 4.14b 'Prohibition on lift nets.**
**(Rukwa P/harvest group)**

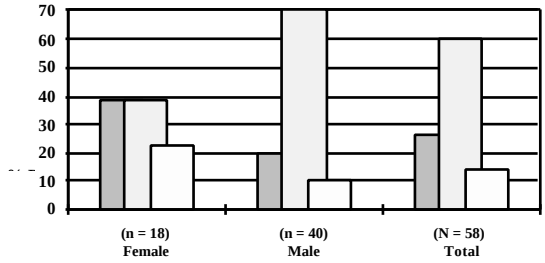



**FIGURE LEGEND**

**■ '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. Apart from male respondents in Kigoma Region, the post-harvest sample group as a whole appears to be moderately in favour (50% - 56% agreement range) of the proposition that fishing rules 'should only be decided by the Government' (Figs. 4.15a-b). Reasons given by those who hold with this view are that rules are 'the responsibility of the Government' and that 'Government has the power' (Tables 4.22a-b). Around 53% of male respondents in Kigoma region reject the proposition, primarily on grounds that fishing restrictions should be a matter of shared responsibility between officials and local community members (Tables 4.23a-b).

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

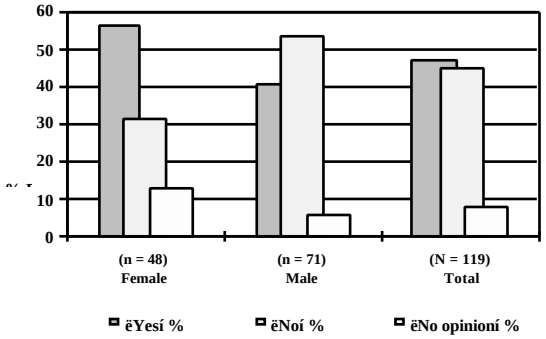



**Fig. 4.15b 'Rules only to be decided by government.' (Rukwa fishers)**

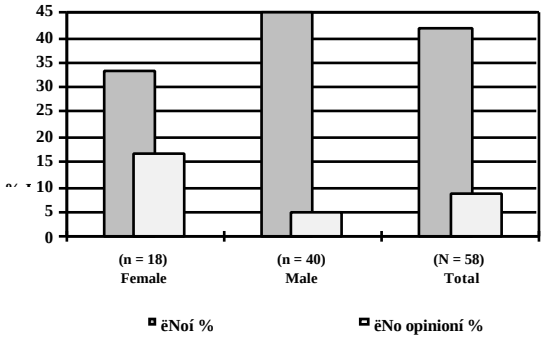



**Table 4.22a Reasons cited for why fishing restrictions should only be decided by government, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Power/responsibity of gov't' %** | 73.1 | 64.3 | 68.5 |
| **'Gov't has the knowledge' %** | 26.9 | 28.6 | 27.8 |
| **' Shared responsibility, gov't + fishers' %** | 0.0 | 7.1 | 3.7 |
| **'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 =54) | 26 | 28 | 54 |
| **Missing cases** | 1 | 1 | 2 |

**Table 4.22b Reasons cited for why fishing restrictions should only be decided by government, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| ‘Power/responsibity of gov’t’ % | 85.7 | 73.7 | 76.9 |
| 'Gov't has the knowledge' % | 0.0 | 26.3 | 19.2 |
| ‘ Shared responsibility, gov’t + fishers’ % | 14.3 | 0.0 | 3.8 |
| ‘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 =26) | 7 | 19 | 26 |
| Missing cases | 2 | 1 | 3 |

**Table 4.23a Reasons cited for why fishing restrictions should <u>not</u> only be decided by government, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| ‘Power/responsibity of gov’t’ % | 0.0 | 0.0 | 0.0 |
| 'Gov't has the knowledge' % | 0.0 | 0.0 | 0.0 |
| ‘ Shared responsibility, gov’t + fishers’ % | 86.7 | 91.4 | 90.0 |
| ‘Power/responsibity of fishers’ % | 6.7 | 0.0 | 2.0 |
| ‘Fishers have the knowledge’ | 6.7 | 8.6 | 8.0 |
| ‘No opinion’ % | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 |
| Report cases (n =51) | 15 | 35 | 50 |
| Missing cases | 0 | 3 | 3 |

**Table 4.23b Reasons cited for why fishing restrictions should not only be decided by government, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **‘Power/responsibity of gov’t’ %** | 0.0 | 0.0 | 4.5 |
| **'Gov't has the knowledge' %** | 0.0 | 0.0 | 0.0 |
| **‘ Shared responsibility, gov’t + fishers’ %** | 100.0 | 70.6 | 76.2 |
| **‘Power/responsibity of fishers’ %** | 0.0 | 5.9 | 4.8 |
| **‘Fishers have the knowledge’** | 0.0 | 23.5 | 19.0 |
| **‘No opinion’ %** | 0.0 | 0.0 | 0.0 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Report cases** (n =26) | 4 | 17 | 21 |
| **Missing cases** | 2 | 1 | 3 |

Figures 4.16a to 4.20b 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?’ Generally following the pattern seen with their fisher counterparts, Tanzanian post-harvest sample respondents are as a group rather definite in their advocacy of the views that: a) there should be more fisheries patrol boats (>70%); b) there should be more fisheries scouts to help with enforcement (>64%); c) police should be more directly involved in the enforcement of fisheries regulations (>53%); d) there should be punishment of fishers (fines, gear confiscation, and/or withdrawal of fishing permit) who violate regulations (>77%); and e) there should be punishment of traders and consumers (fines, product confiscation, and/or withdrawal of trading permit) who violate regulations (>58%).

**Fig. 4.16a 'Should be more patrol boats. (Kigoma P/harvest group)**

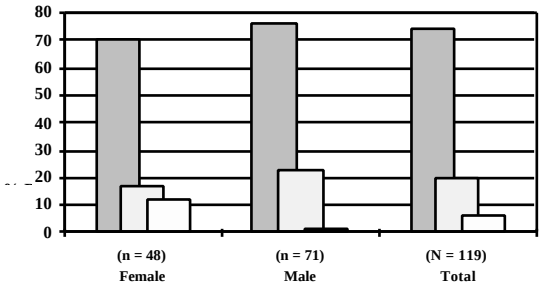



**Fig. 3.16b 'Should be more patrol boats. (Rukwa P/harvest group)**

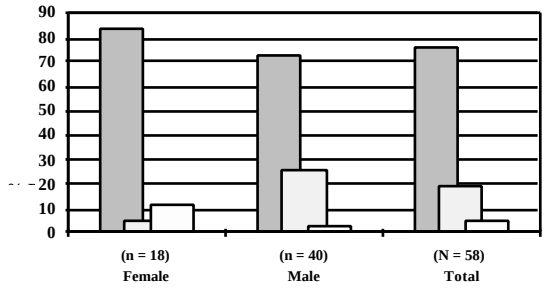



**Fig. 4.17a 'Should be more fishery scouts. (Kigoma P/harvest group)**

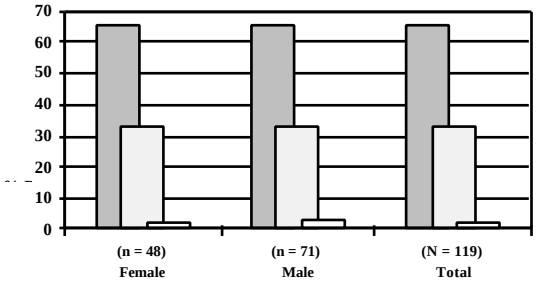



**Fig. 4.17b 'Should be more fishery scouts. (Rukwa P/harvest group)**

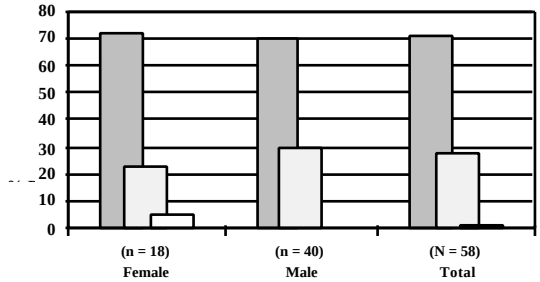



**Fig. 4.18a 'Involve police more directly in enforcement.' (Kigoma P/harvest group)**

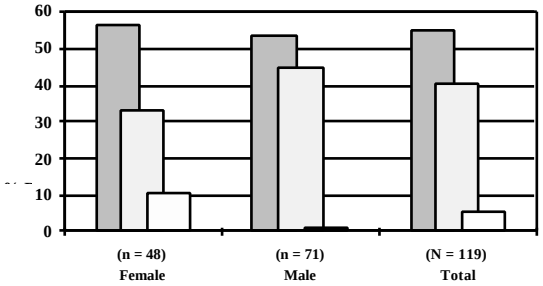



**Fig. 4.18b 'Involve police more directly in enforcement.' (Rukwa P/harvest group)**

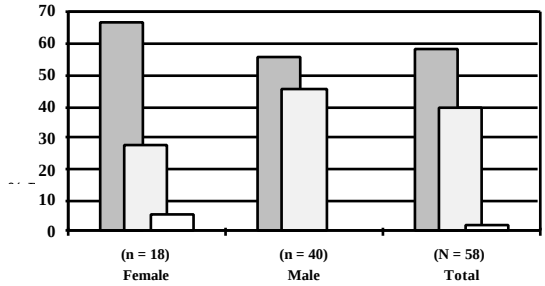



**Fig. 4.19a 'Should punish offending fisher (Kigoma P/harvest group)**

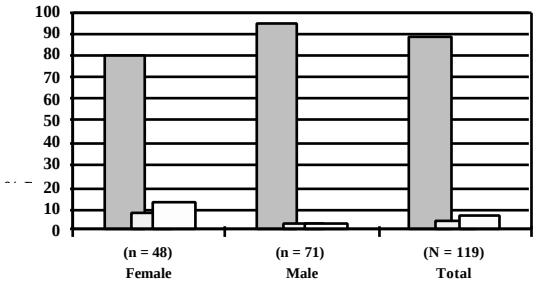



**Fig. 4.19b 'Should punish offending fisher (Rukwa P/harvest group)**

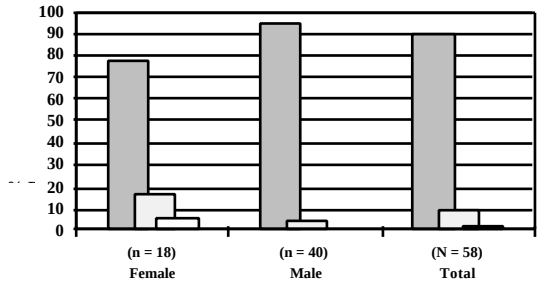



**FIGURE LEGEND**

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

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

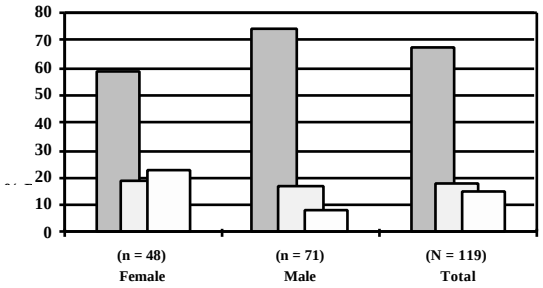



Fig. 4.20b 'Should punish offending traders/consumers (Rukwa P/harvest group)

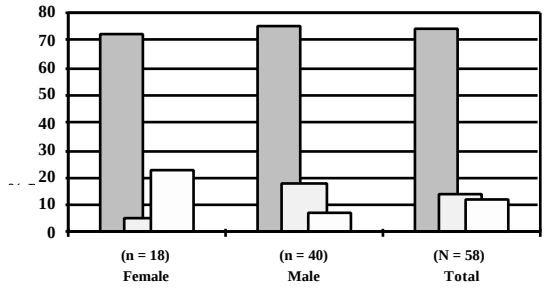



**FIGURE LEGEND**

■ **'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. Tabulations of responses were made only for the first and second most serious orders of problem, as most respondents did not mention a third order problem. The tabulations 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 female post-harvest across the two regions at both the first and second order levels (Tables 4.24a - 4.25b). '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, constitute the most frequently cited theme in the two rank orders for male respondents in Kigoma Region. Problems revolving around the 'lack of security,' which may include theft, civil unrest, and harassment by police or military personnel, figure as the most common concern for Rukwa male respondents at the first order level. Rukwa men go on to list 'low catches/profits' most frequently as a second order problem.

**Table 4.24a Most serious occupational problem cited, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Problem cited: | Female | Male | Total |
|---|---|---|---|
| Lack of security % | 23.9 | 14.1 | 17.9 |
| Low catches/profit % | 39.1 | 22.5 | 29.1 |
| Seasonal fluctuations % | 0.0 | 0.0 | 0.0 |
| Lack of/inadequate gear % | 4.3 | 5.6 | 5.1 |
| Lack of engine/fuel % | 0.0 | 0.0 | 0.0 |
| Lack of/poor processing facilities % | 15.2 | 19.7 | 17.9 |
| Transport/marketing problems % | 15.2 | 25.4 | 21.4 |
| 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 % | 0.0 | 1.4 | 0.9 |
| Lack of Gov't aid % | 0.0 | 0.0 | 0.0 |
| Weather conditions % | 2.2 | 11.3 | 7.7 |
| 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 = 117) | 46 | 71 | 117 |
| Cases with no problem cited | 2 | 0 | 2 |

**Table 4.24b Most serious occupational problem cited, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Problem cited: | Female | Male | Total |
|---|---|---|---|
| Lack of security % | 21.4 | 26.3 | 25.0 |
| Low catches/profit % | 42.9 | 13.2 | 21.2 |
| Seasonal fluctuations % | 0.0 | 0.0 | 0.0 |
| Lack of/inadequate gear % | 0.0 | 15.8 | 11.5 |
| Lack of engine/fuel % | 0.0 | 2.6 | 1.9 |
| Lack of/poor processing facilities % | 7.1 | 21.1 | 17.3 |
| Transport/marketing problems % | 7.1 | 15.8 | 13.5 |
| 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 % | 7.1 | 0.0 | 1.9 |
| Lack of Gov't aid % | 0.0 | 0.0 | 0.0 |
| Weather conditions % | 0.0 | 2.6 | 1.9 |
| Presence of foreigners % | 0.0 | 0.0 | 0.0 |
| Safety problems/poor working conditions % | 14.3 | 2.6 | 5.8 |
| Total | 100.0 | 100.0 | 100.0 |
| Report cases (n = 52) | 14 | 38 | 52 |
| Cases with no problem cited | 4 | 2 | 6 |

**Table 4.25a Second most serious occupational problem cited, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Problem cited: | Female | Male | Total |
|---|---|---|---|
| Lack of security % | 10.0 | 11.5 | 11.0 |
| Low catches/profit % | 43.3 | 18.0 | 26.4 |
| Seasonal fluctuations % | 0.0 | 0.0 | 0.0 |
| Lack of/inadequate gear % | 0.0 | 4.9 | 3.3 |
| Lack of engine/fuel % | 0.0 | 0.0 | 0.0 |
| Lack of/poor processing facilities % | 10.0 | 13.1 | 12.1 |
| Transport/marketing problems % | 30.0 | 32.8 | 31.9 |
| 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 % | 0.0 | 4.9 | 3.3 |
| Lack of Gov't aid % | 0.0 | 0.0 | 0.0 |
| Weather conditions % | 6.7 | 14.8 | 12.1 |
| 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 = 91) | 30 | 61 | 91 |
| No second problem mentioned | 18 | 10 | 28 |

**Table 4.25b Second most serious occupational problem cited, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Problem cited: | Female | Male | Total |
|---|---|---|---|
| Lack of security % | 25.0 | 6.7 | 10.5 |
| Low catches/profit % | 50.0 | 23.3 | 28.9 |
| Seasonal fluctuations % | 0.0 | 0.0 | 0.0 |
| Lack of/inadequate gear % | 0.0 | 20.0 | 15.8 |
| Lack of engine/fuel % | 0.0 | 6.7 | 5.3 |
| Lack of/poor processing facilities % | 0.0 | 13.3 | 10.5 |
| Transport/marketing problems % | 25.0 | 16.7 | 18.4 |
| 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 % | 0.0 | 6.7 | 5.3 |
| Lack of Gov't aid % | 0.0 | 0.0 | 0.0 |
| Weather conditions % | 0.0 | 3.3 | 2.6 |
| Presence of foreigners % | 0.0 | 0.0 | 0.0 |
| Safety problems/poor working conditions % | 0.0 | 3.3 | 2.6 |
| Total | 100.0 | 100.0 | 100.0 |
| Report cases (n = 38) | 8 | 30 | 38 |
| No second problem mentioned | 10 | 10 | 20 |

**Table 4.25b Second most serious occupational problem cited, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Problem cited: | Female | Male | Total |
|---|---|---|---|
| Lack of security % | 25.0 | 6.7 | 10.5 |
| Low catches/profit % | 50.0 | 23.3 | 28.9 |
| Seasonal fluctuations % | 0.0 | 0.0 | 0.0 |
| Lack of/inadequate gear % | 0.0 | 20.0 | 15.8 |
| Lack of engine/fuel % | 0.0 | 6.7 | 5.3 |
| Lack of/poor processing facilities % | 0.0 | 13.3 | 10.5 |
| Transport/marketing problems % | 25.0 | 16.7 | 18.4 |
| 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 % | 0.0 | 6.7 | 5.3 |
| Lack of Gov't aid % | 0.0 | 0.0 | 0.0 |
| Weather conditions % | 0.0 | 3.3 | 2.6 |
| Presence of foreigners % | 0.0 | 0.0 | 0.0 |
| Safety problems/poor working conditions % | 0.0 | 3.3 | 2.6 |
| Total | 100.0 | 100.0 | 100.0 |
| Report cases (n = 38) | 8 | 30 | 38 |
| No second problem mentioned | 10 | 10 | 20 |

## 5. CONCLUSION

### 5.1 Summary Review

The 1997 LTR Socio-Economic (SEC) survey of the Tanzanian sector of Lake Tanganyika began on the first of July 1997 and was completed in about two and a half weeks. The survey team visited a total of 40 sample sites 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, the Tanzanian team used three different data collection forms at each sample site (Reynolds and Paffen 1997b). Form 1 was used to collect information on general community features. Form 2 was used for interviews with individual fishers, and Form 3 for interviews with individual processors and traders.

On-site interviews were conducted with a total of 475 fishers, 301 in Kigoma Region and 174 in Rukwa Region. The fisher sample was chosen to represent approximately a 5% fraction of the estimated total number of active fishing units in the Tanzanian sector, and further distinguished according to estimated proportions of about 40% 'traditional' and 60% 'artisanal' main gear units. Those working artisanal gear (standard lift nets, 'Apollo' lift nets, day beach seines, night

beach seines, or 'chiromilla' seines) 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.). The same owner-crew distinction applies to the traditional fishery (hand lines, longlines, gillnets, and lusenga nets). The Tanzania fisher sample as actually derived is made up of a total of 351 artisanals, of whom 79 are owners and 272 crew, and 124 traditionals, of whom 81 are owners and 43 crew.

The field team also conducted interviews with 177 processors and traders, or 'post-harvest' sample respondents, 119 in Kigoma Region and 58 in Rukwa Region. Of this group, 70 engage in processing only (i.e. are rarely involved in trade), 70 in processing and trading combined, and 37 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 ( 63%) and women (37%).

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 income status, and views on sector problems and prospects.

## 5.2 Principal Findings

### *Local fishing villages*

1) Tanzanian sample fishing villages are characterised by a large range of population size, from a low of just a few score inhabitants to a high of over 9,800. The gender structure of village populations indicates a slight to marked majority of women at most Kigoma Region sites, whereas for Rukwa Region the situation seems more evenly balanced between sites with female majorities and those with male majorities.

2) Nearly all sites report an increase in overall population compared with the situation five years ago. Growth is attributed primarily to 'natural increase.'

3) Road access to sample sites is extremely limited. Access to outside markets is in virtually all cases restricted to water transport links.

4) There is scarce occurrence of basic commercial, social, or fisheries technical facilities or services in Rukwa Region. Kigoma Region sites are comparatively better served, but neither region is very well endowed with major amenities including protected water supplies, electricity, telephone/radio call service, post offices, and banks.

***Local fishers -- background characteristics***

5) All respondents in the Tanzanian fisher sample are male. Owners in both the artisanal and traditional fisheries tend to be older than their respective crew counterparts.

6) Except amongst traditional Rukwa Region crew, most fisher sample respondents report possession of a primary school certificate. Rukwa traditional crew are equally divided between those who do and do not hold a primary certificate.

7) Most respondents are married and report bearing responsibility for at least one dependent, with higher rates on both of these social obligation measures being registered by owners.

8) Fishers tend to originate from places other than their current landing site bases, except in the case of artisanal owners in Kigoma Region. Most of those born elsewhere indicate a wish to return to their 'original family place' as the motivation for their migration to their present place of residence.

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

10) Whereas the most crew members (artisanal or traditional) have ten or less years of experience in fishing work, most owners (artisanal or traditional), except in the case of traditional owners in Kigoma, have more than ten years.

11) Secondary employment is common for all categories of fishers, with farming being the usual form of such employment. Substantial majorities of fishers of all types claim access to at least some land. Average plot size is around one hectare in both regions.

12) Indicative information on estimated monthly incomes suggest a great disparity exists between artisanal owners and crew during 'good' fishing periods The former are relatively much better off. Owner-crew 'good' period disparities are not nearly so noticeable within the traditional fishery. During 'poor' periods, few sample fishers in any category seem to be making even modest amounts of money.

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

13) Most respondents across all fisher categories seem disposed to continue in their present occupation, and for the most part in their present place of operation.

14) Commitment to fishing is not especially reflected in patterns of stated preferences for use of a hypothetical one year's saved earnings amongst Kigoma sample fishers, who tend to put family welfare purposes before fishing gear and equipment investments. Rates at which Rukwa sample fishers express

favour towards gear/equipment-related investments are stronger than for their Kigoma counterparts, but not emphatically so.

15) There is a generally pessimistic appraisal of past catch trends within the fisher sample population, though many respondents could not point to a specific factor to explain this perceived state of affairs. Others were split between assigning the cause to 'poor fishing methods,' 'over-fishing,' and 'environmental change.' In terms of expectations for the near future, respondents in both regions tend to be divided between believing that there will be a continued pattern of decline and not having any opinion on the matter.

16) With regard to resource use rights, sample Tanzanian fishers as a group do not seem to be strongly in favour of limiting access to the lake's fish resources. They are quite positive about allowing 'everyone to fish everywhere,' and about allowing 'everybody to fish in waters outside of their own immediate administrative district.' Opinion in the sample population is more evenly divided on the question of allowing people to to fish in waters outside of their own country.

17) Data on fisher respondents' views vis-à-vis possible measures to regulate participation in the fisheries or the use of certain fishing gear or methods show a consensus against imposition of strong measures that would:

a) limit access by season;
b) limit access through operator quotas; or
c) curb the use of common types of gear.

18) Moderate to strong majorities of fishers in all categories across both regions are opposed to:

a) any provision for closed fishing seasons or times;
b) any restriction of numbers of fishers; and
c) any ban on beach seines or lift nets, or any even restriction (time or place) for their operation.

19) At the same time, the principle that some kinds of restrictions should apply seems to be generally accepted. Sample fishers appear to be quite soundly in favour of restrictions on mininum mesh sizes for gillnets, beach seines, kapenta beach seines, and lift nets.

20) Reaction to other possible measures is less uniform. Opinion is divided over the questions of establishing closed fishing areas/reserves, restricting the use of industrial gear or prohibiting it altogether, and banning of 'active' gillnetting (beating on water to scare fish into net).

21) There appears to be a certain measure of sentiment against the idea that fishing rules 'should only be decided by the Government.' Fishers are mostly of the view that regulatory measures ought to be a matter of shared responsibility between officials and local user communities.

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

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

23)Group majority opinion is less solid but still in favour of the proposition that there should be 'more fishery scouts for enforcement.'

24)Opinion is moderately to strongly in favour of the idea of 'more direct police involvement in fishery enforcement' amongst all Kigoma fisher sample respondents and amongst artisanal fisher respondents in Rukwa. Traditional Rukwa fishers are generally opposed to it.

25)On the question of identifying the most serious obstacles to their occupational success, local fishers voice concern for the security situation on the lake. Also evident is a widely shared sense of frustration with gear problems (lack of availability or inadequate availability).

***Local fish processors and traders --background characteristics***

26)Post-harvest sample respondents are primarily male ( 63%). Male and female sub-group age structures are quite similar in Kigoma Region. In Rukwa Region, women processors/traders are substantially younger than their male counterparts.

27)Overall formal educational attainment is moderately high, though there are some gender-based differences. Whilst some 79% of Kigoma Region males have attained a primary school certificate, the corresponding figure for women is only about 46%. In Rukwa Region gender-based educational attainment differences are far less striking at the primary level.

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

29)Around half of the sample processors/traders originate from places other than their current landing site bases. In Kigoma Region, most of those born elsewhere indicate a wish to return to their 'original family place' as the motivation for their migration to their present place of residence. In Rukwa, a wish to engage in the fish business is the most frequently cited reason for migration.

30)All respondents 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. Men in both regions slightly lead women in terms of years of work experience.

31)'Full-time' fish processing or trading employment may also be supplemented by other forms of work, especially in farming. Like their fisher sample counterparts, respondents in the post-harvest group usually own at least some land.

32)Indicative information on estimated monthly incomes reveals that female post-harvest respondents generally earn less than their male counterparts during during 'good' months. Most post-harvest respondents estimate making US$ 100 (equivalent) or less per month in the best periods, and US$ 50 or less during the 'poor' periods.

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

33)Post-harvest group respondents of both sexes are very strongly inclined to stay with with their present line of work, though just under 30% of the Rukwa sample claim a preference for operating out of some other location than their present one.

34)Some commitment to fishing-related work is further reflected in patterns of stated preferences for use of a hypothetical one year's saved earnings amongst female informants in Kigoma Region, who tend to mention fish processing and trading investment themes. Male informants in Kigoma region appear to give family welfare purposes highest priority. Family welfare also figures prominently for both sexes in Rukwa.

35)Almost 96% of the post-harvest sample group are of the opinion that that catches have declined from the time they first became involved in the fish business. The sheer pressure of too much fishing is taken as the primary factor explaining recent catch declines. Much more uncertainty exists in relation to what future trends will be, with many respondents venturing no opinion at all and the others split on whether catches will increase or decrease.

36)With regard to resource use rights, Tanzanian fish processors/traders are as a group not much in favour of any restriction on user access to the lake's fishery resources. Majority opinion supports the propositions that 'everybody ought to be allowed to fish everywhere,' and 'everybody ought to be allowed to fish in waters outside of their own immediate administrative district.' On the question of 'everybody ought to be allowed to fish in waters outside of their own country,' a fair majority of Kigoma respondents are in favour and a small majority of Rukwa respondents against.

37)Opinion varies across both gender and regional lines on measures which would impose closed fishing periods or seasons and restrictions on beach seine or industrial fishing operations. Strong support is registered for general measures to restrict mesh sizes. On the other hand, strong dissent is expressed over measures which would impose

restrictions on lift net operations, or any outright ban on beach seining or lift netting. Moderate majorities of processors/traders oppose restrictions on the number of people allowed to fish.

38) Apart from male respondents in Kigoma Region, the post-harvest sample group as a whole appears to be moderately in favour of the proposition that fishing rules 'should only be decided by the Government'

39) 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 more fisheries scouts to help with enforcement;
c) police should be more directly involved in the enforcement of fisheries regulations;
d) there should be punishment of fishers who violate regulations (fines, gear confiscation, and/or withdrawal of fishing permit); and
e) there should be punishment of traders and consumers who violate regulations (fines, product confiscation, and/or withdrawal of trading permit).

40) 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 for women post-harvest respondents. 'Marketing problems,' including lack of transport and/or high transport costs, and poor storage and/or selling facilities as well as simple low demand for product, are the principal obstacle to most male respondents in Kigoma Region. For the Rukwa male post-harvest sample, problems revolving around the 'lack of security,' which may include theft, civil unrest, and harassment by police or military personnel, figure as the most common concern.

### 5.3 Final Observations

The national data sets generated through the three survey forms are very large and contain a wealth of detail that the reporting team simply could not deal 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 this review 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 Tanzania 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 IFIP study of the Kigoma Region artisanal fisheries (Leendertse and Horemans, 1991). 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 Kigoma Region 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 Kigoma Region fishers are far more concerned with family welfare matters 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 paramount concern for most Kigoma artisanal fishers.

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**1997a** Lake Tanganyika fisheries: Survey planning and training workshops.' FAO/FINNIDA Research for Management of the Fisheries of Lake Tanganyika.
**GCP/RAF/271/FIN - TD/65 (En). 35p.**

**Reynolds, J.E. and P. Paffen** 'LTR lakewide socio-economic
**1997b** survey, 1997: Notes on methods and procedures.' FAO/FINNIDA Research for Management of the Fisheries of Lake Tanganyika.
**GCP/RAF/271/FIN - TD/66 (En). 79p.**

## ANNEX 1

## ADDITIONAL STATISTICAL TABLES -- TANZANIAN FISHER SAMPLE

**Table A1.1a View on allowing everyone to fish everywhere in lake, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 77.8 | 71.8 | 81.8 | 76.9 |
| 'No' % | 22.2 | 25.3 | 18.2 | 11.5 |
| 'No opinion' % | 0.0 | 2.9 | 0.0 | 11.5 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 300) | 45 | 174 | 55 | 26 |
| Missing cases | 0 | 1 | 0 | 0 |

**Table A1.1b View on allowing everyone to fish everywhere in lake, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 82.4 | 71.1 | 84.6 | 70.6 |
| 'No' % | 14.7 | 23.7 | 15.4 | 29.4 |
| 'No opinion' % | 2.9 | 5.2 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.2a View on allowing people to fish outside own district, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 95.6 | 92.6 | 90.9 | 88.5 |
| 'No' % | 4.4 | 6.3 | 9.1 | 7.7 |
| 'No opinion' % | 0.0 | 1.1 | 0.0 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.2b View on allowing people to fish outside own district, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 94.1 | 92.8 | 76.9 | 88.2 |
| 'No' % | 5.9 | 6.2 | 23.1 | 11.8 |
| 'No opinion' % | 0.0 | 1.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.3a View on allowing people to fish outside own country, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 48.9 | 53.1 | 58.2 | 53.8 |
| 'No' % | 51.1 | 45.7 | 41.8 | 46.2 |
| 'No opinion' % | 0.0 | 1.1 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.3b View on allowing people to fish outside own country, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 52.9 | 51.5 | 26.9 | 23.5 |
| 'No' % | 47.1 | 48.5 | 73.1 | 70.6 |
| 'No opinion' % | 0.0 | 0.0 | 0.0 | 5.9 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.4a View on always enough fish for everybody in future, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania.**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 51.1 | 29.1 | 41.8 | 7.7 |
| 'No' % | 26.7 | 38.3 | 32.7 | 34.6 |
| 'No opinion' % | 22.2 | 32.6 | 25.5 | 57.7 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.4b View on always enough fish for everybody in future, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 26.5 | 21.6 | 23.1 | 5.9 |
| 'No' % | 32.4 | 46.4 | 53.8 | 52.9 |
| 'No opinion' % | 41.2 | 32.0 | 23.1 | 41.2 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.5a View on closed seasons/times, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 22.7 | 27.6 | 20.0 | 42.3 |
| 'Disagree' % | 77.3 | 64.9 | 76.4 | 53.8 |
| 'No opinion' % | 0.0 | 7.5 | 3.6 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n =299) | 44 | 174 | 55 | 26 |
| Missing cases | 1 | 1 | 0 | 0 |

**Table A1.5b View on closed seasons/times, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 38.2 | 40.2 | 34.6 | 47.1 |
| 'Disagree' % | 55.9 | 58.8 | 65.4 | 52.9 |
| 'No opinion' % | 5.9 | 1.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N =174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.6a View on closed areas/places, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 46.7 | 30.5 | 40.0 | 53.8 |
| 'Disagree' % | 40.0 | 46.0 | 43.6 | 42.3 |
| 'No opinion' % | 13.3 | 23.6 | 16.4 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 300) | 45 | 174 | 55 | 26 |
| Missing cases | 0 | 1 | 0 | 0 |

**Table A1.6b View on closed areas/places, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 41.2 | 43.3 | 26.9 | 47.1 |
| 'Disagree' % | 17.6 | 38.1 | 53.8 | 35.3 |
| 'No opinion' % | 41.2 | 18.6 | 19.2 | 17.6 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.7a View on restriction of numbers of fishers, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 8.9 | 19.0 | 10.9 | 7.7 |
| 'Disagree' % | 91.1 | 75.3 | 85.5 | 84.6 |
| 'No opinion' % | 0.0 | 5.7 | 3.6 | 7.7 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 300) | 45 | 174 | 55 | 26 |
| Missing cases | 0 | 1 | 0 | 0 |

**Table A1.7b View on restriction of numbers of fishers, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 8.8 | 12.4 | 11.5 | 17.6 |
| 'Disagree' % | 88.2 | 85.6 | 84.6 | 76.5 |
| 'No opinion' % | 2.9 | 2.1 | 3.8 | 5.9 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.8a View on restriction of mesh sizes, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 67.5 | 75.0 | 81.3 | 78.3 |
| 'Disagree' % | 30.0 | 22.0 | 18.8 | 21.7 |
| 'No opinion' % | 2.5 | 3.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 279) | 40 | 168 | 48 | 23 |
| Missing cases | 5 | 7 | 7 | 3 |

**Table A1.8b View on restriction of mesh sizes, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 90.9 | 78.7 | 94.7 | 93.3 |
| 'Disagree' % | 9.1 | 20.2 | 5.3 | 6.7 |
| 'No opinion' % | 0.0 | 1.1 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 161) | 33 | 94 | 19 | 15 |
| Missing cases | 1 | 3 | 7 | 2 |

**Table A1.9a View on restriction for gillnet mesh size, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 64.4 | 70.3 | 80.0 | 73.1 |
| 'Disagree' % | 31.1 | 26.9 | 20.0 | 23.1 |
| 'No opinion' % | 4.4 | 2.9 | 0.0 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.9b View on restriction for gillnet mesh size, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 91.2 | 78.4 | 84.6 | 88.2 |
| 'Disagree' % | 8.8 | 20.6 | 15.4 | 11.8 |
| 'No opinion' % | 0.0 | 1.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.10a View on restriction for beach seine mesh size, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 66.7 | 67.1 | 65.5 | 76.9 |
| 'Disagree' % | 31.1 | 27.2 | 32.7 | 23.1 |
| 'No opinion' % | 2.2 | 5.8 | 1.8 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 299) | 45 | 173 | 55 | 26 |
| Missing cases | 0 | 2 | 0 | 0 |

**Table A1.10b View on restriction for beach seine mesh size, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 82.4 | 76.3 | 92.3 | 88.2 |
| 'Disagree' % | 17.6 | 23.7 | 7.7 | 5.9 |
| 'No opinion' % | 0.0 | 0.0 | 0.0 | 5.9 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.11a View on restriction for kapenta beach seine mesh size, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 56.8 | 60.8 | 57.7 | 75.0 |
| 'Disagree' % | 29.5 | 21.6 | 36.5 | 20.8 |
| 'No opinion' % | 13.6 | 17.5 | 5.8 | 4.2 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 291) | 44 | 171 | 52 | 24 |
| Missing cases | 1 | 4 | 3 | 2 |

**Table A1.11b View on restriction for kapenta beach seine mesh size, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 73.5 | 66.7 | 76.9 | 70.6 |
| 'Disagree' % | 14.7 | 18.8 | 11.5 | 5.9 |
| 'No opinion' % | 11.8 | 14.6 | 11.5 | 23.5 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 173) | 34 | 96 | 26 | 17 |
| Missing cases | 0 | 1 | 0 | 0 |

**Table A1.12a View on restriction for lift net mesh size, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 57.8 | 65.1 | 63.6 | 65.4 |
| 'Disagree' % | 37.8 | 31.4 | 30.9 | 30.8 |
| 'No opinion' % | 4.4 | 3.4 | 5.5 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.12b View on restriction for lift net mesh size, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 70.6 | 75.3 | 76.9 | 52.9 |
| 'Disagree' % | 17.6 | 19.6 | 11.5 | 29.4 |
| 'No opinion' % | 11.8 | 5.2 | 11.5 | 17.6 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.13a View on restriction for industrial gear, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 44.4 | 38.3 | 40.0 | 42.3 |
| 'Disagree' % | 48.9 | 56.0 | 52.7 | 53.8 |
| 'No opinion' % | 6.7 | 5.7 | 7.3 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.13b View on restriction for industrial gear, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 52.9 | 51.5 | 65.4 | 52.9 |
| 'Disagree' % | 44.1 | 41.2 | 26.9 | 47.1 |
| 'No opinion' % | 2.9 | 7.2 | 7.7 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.14a View on prohibition for industrial gear, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 20.0 | 17.7 | 25.5 | 38.5 |
| 'Disagree' % | 73.3 | 76.0 | 67.3 | 57.7 |
| 'No opinion' % | 6.7 | 6.3 | 7.3 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 152) | 27 | 95 | 11 | 19 |
| Missing cases | 1 | 2 | 0 | 0 |

**Table A1.14b View on prohibition for industrial gear, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 41.2 | 45.4 | 65.4 | 35.3 |
| 'Disagree' % | 55.9 | 49.5 | 30.8 | 64.7 |
| 'No opinion' % | 2.9 | 5.2 | 3.8 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.15a View on restrictions for beach seines, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 22.2 | 25.1 | 22.2 | 15.4 |
| 'Disagree' % | 77.8 | 73.7 | 77.8 | 80.8 |
| 'No opinion' % | 0.0 | 1.1 | 0.0 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 300) | 45 | 175 | 54 | 26 |
| Missing cases | 0 | 0 | 1 | 0 |

**Table A1.15b View on restrictions for beach seines, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 29.4 | 15.5 | 38.5 | 17.6 |
| 'Disagree' % | 70.6 | 83.5 | 61.5 | 82.4 |
| 'No opinion' % | 0.0 | 1.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.16a View on prohibition for beach seines, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 6.7 | 6.3 | 5.5 | 11.5 |
| 'Disagree' % | 93.3 | 93.1 | 92.7 | 84.6 |
| 'No opinion' % | 0.0 | 0.6 | 1.8 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.16b View on prohibition for beach seines, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 5.9 | 7.2 | 19.2 | 5.9 |
| 'Disagree' % | 91.2 | 91.8 | 80.8 | 88.2 |
| 'No opinion' % | 2.9 | 1.0 | 0.0 | 5.9 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.17a View on restrictions for lift nets, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 15.6 | 10.3 | 14.5 | 7.7 |
| 'Disagree' % | 84.4 | 89.7 | 83.6 | 92.3 |
| 'No opinion' % | 0.0 | 0.0 | 1.8 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.17b View on restrictions for lift nets, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 14.7 | 13.4 | 19.2 | 11.8 |
| 'Disagree' % | 76.5 | 85.6 | 76.9 | 82.4 |
| 'No opinion' % | 8.8 | 1.0 | 3.8 | 5.9 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.18a View on prohibition for lift nets, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 4.4 | 3.4 | 7.3 | 7.7 |
| 'Disagree' % | 95.6 | 96.6 | 90.9 | 92.3 |
| 'No opinion' % | 0.0 | 0.0 | 1.8 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.18b View on prohibition for lift nets, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 5.9 | 2.1 | 3.8 | 11.8 |
| 'Disagree' % | 88.2 | 96.9 | 92.3 | 82.4 |
| 'No opinion' % | 5.9 | 1.0 | 3.8 | 5.9 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.19a View on prohibition for 'katuli' fishing, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 53.3 | 43.1 | 70.9 | 42.3 |
| 'Disagree' % | 31.1 | 44.3 | 23.6 | 50.0 |
| 'No opinion' % | 15.6 | 12.6 | 5.5 | 7.7 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 301) | 45 | 174 | 55 | 26 |
| Missing cases | 0 | 1 | 0 | 0 |

**Table A1.19b View on prohibition for 'katuli' fishing, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 64.7 | 63.9 | 57.7 | 64.7 |
| 'Disagree' % | 20.6 | 30.9 | 30.8 | 35.3 |
| 'No opinion' % | 14.7 | 5.2 | 11.5 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.20a View on fishing restrictions only to be decided by government, sample respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 15.6 | 30.9 | 25.5 | 23.1 |
| 'No' % | 77.8 | 52.6 | 72.7 | 61.5 |
| 'No opinion' % | 6.7 | 16.6 | 1.8 | 15.4 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.20b View on fishing restrictions only to be decided by government, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Yes' % | 29.4 | 37.1 | 42.3 | 29.4 |
| 'No' % | 58.8 | 51.5 | 53.8 | 52.9 |
| 'No opinion' % | 11.8 | 11.3 | 3.8 | 17.6 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.21a View on 'should be more patrol boats,' respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 91.1 | 88.6 | 83.6 | 73.1 |
| 'Disagree' % | 8.9 | 9.7 | 16.4 | 23.1 |
| 'No opinion' % | 0.0 | 1.7 | 0.0 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.21b View on 'should be more patrol boats,' respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 76.5 | 80.4 | 73.1 | 82.4 |
| 'Disagree' % | 23.5 | 17.5 | 23.1 | 11.8 |
| 'No opinion' % | 0.0 | 2.1 | 3.8 | 5.9 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.22a View on 'more fishery scouts for enforcment,' respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 51.1 | 70.3 | 50.9 | 57.7 |
| 'Disagree' % | 48.9 | 29.1 | 47.3 | 38.5 |
| 'No opinion' % | 0.0 | 0.6 | 1.8 | 3.8 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.22b View on 'more fishery scouts for enforcment,' respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 73.5 | 72.2 | 73.1 | 82.4 |
| 'Disagree' % | 26.5 | 26.8 | 23.1 | 17.6 |
| 'No opinion' % | 0.0 | 1.0 | 3.8 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.23a View on 'involve police more directly in fishery enforcment,' respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 57.8 | 57.7 | 65.5 | 65.4 |
| 'Disagree' % | 42.2 | 40.6 | 32.7 | 34.6 |
| 'No opinion' % | 0.0 | 1.7 | 1.8 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 301) | 45 | 175 | 55 | 26 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.23b View on 'involve police more directly in fishery enforcment,' respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 58.8 | 70.1 | 46.2 | 41.2 |
| 'Disagree' % | 41.2 | 29.9 | 53.8 | 58.8 |
| 'No opinion' % | 0.0 | 0.0 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (N = 174) | 34 | 97 | 26 | 17 |
| Missing cases | 0 | 0 | 0 | 0 |

**Table A1.24a View on 'punish offending fishers,' respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 95.6 | 93.1 | 96.4 | 96.0 |
| 'Disagree' % | 0.0 | 4.6 | 3.6 | 0.0 |
| 'No opinion' % | 4.4 | 2.3 | 0.0 | 4.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 299) | 45 | 174 | 55 | 25 |
| Missing cases | 0 | 1 | 0 | 1 |

**Table A1.24b View on 'punish offending fishers,' respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 94.1 | 92.8 | 96.2 | 93.8 |
| 'Disagree' % | 5.9 | 5.2 | 3.8 | 6.3 |
| 'No opinion' % | 0.0 | 2.1 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 174) | 34 | 97 | 26 | 16 |
| Missing cases | 0 | 0 | 0 | 1 |

**Table A1.25a View on 'punish offending traders/consumers,' respondents by type of fishery and fisher category, Kigoma Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 93.3 | 95.4 | 92.7 | 96.2 |
| 'Disagree' % | 0.0 | 1.2 | 7.3 | 3.8 |
| 'No opinion' % | 6.7 | 3.5 | 0.0 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 299) | 45 | 173 | 55 | 26 |
| Missing cases | 0 | 2 | 0 | 0 |

**Table A1.25b View on 'punish offending traders/consumers,' respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Artisanal | | Traditional | |
|---|---|---|---|---|
| | Owner | Crew | Owner | Crew |
| 'Agree' % | 91.2 | 93.8 | 92.3 | 100.0 |
| 'Disagree' % | 5.9 | 5.2 | 3.8 | 0.0 |
| 'No opinion' % | 2.9 | 1.0 | 3.8 | 0.0 |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 |
| Report cases (n = 173) | 34 | 97 | 26 | 16 |
| Missing cases | 0 | 0 | 0 | 1 |

## ANNEX 2

## ADDITIONAL STATISTICAL TABLES -- TANZANIAN POST-HARVEST SAMPLE

**Table A2.1a View on allowing everyone to fish everywhere in lake, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 62.5 | 74.6 | 69.7 |
| 'No' % | 33.3 | 21.1 | 26.1 |
| 'No opinion' % | 4.2 | 4.2 | 4.2 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 119) | 48 | 71 | 119 |

**Table A2.1b View on allowing everyone to fish everywhere in lake, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 50.0 | 57.5 | 55.2 |
| 'No' % | 50.0 | 40.0 | 43.1 |
| 'No opinion' % | 0.0 | 2.5 | 1.7 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 58) | 18 | 40 | 58 |

**Table A2.2a View on allowing people to fish outside own district, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 75.0 | 94.4 | 86.6 |
| 'No' % | 20.8 | 4.2 | 10.9 |
| 'No opinion' % | 4.2 | 1.4 | 2.5 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 119) | 48 | 71 | 119 |

**Table A2.2b View on allowing people to fish outside own district, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Yes' %** | 77.8 | 82.5 | 81.0 |
| **'No' %** | 22.2 | 17.5 | 19.0 |
| **'No opinion' %** | 0.0 | 0.0 | 0.0 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.3a View on allowing people to fish outside own country, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Yes' %** | 50.0 | 59.2 | 55.5 |
| **'No' %** | 45.8 | 38.0 | 41.2 |
| **'No opinion' %** | 4.2 | 2.8 | 3.4 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.3b View on allowing people to fish outside own country, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Yes' %** | 61.1 | 40.0 | 46.6 |
| **'No' %** | 38.9 | 57.5 | 51.7 |
| **'No opinion' %** | 0.0 | 2.5 | 1.7 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 18 | 40 | 58 |

**Table A2.4a View on always enough fish for everybody in future, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Yes' %** | 27.1 | 38.0 | 33.6 |
| **'No' %** | 35.4 | 38.0 | 37.0 |
| **'No opinion' %** | 37.5 | 23.9 | 29.4 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.4b View on always enough fish for everybody in future, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Yes' %** | 27.8 | 32.5 | 31.0 |
| **'No' %** | 44.4 | 52.5 | 50.0 |
| **'No opinion' %** | 27.8 | 15.0 | 19.0 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.5a View on closed seasons/times, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **‘Agree’ %** | 43.8 | 40.8 | 42.0 |
| **‘Disagree’ %** | 37.5 | 57.7 | 49.6 |
| **‘No opinion’ %** | 18.7 | 1.5 | 8.4 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.5b View on closed seasons/times, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 50.0 | 67.5 | 62.1 |
| 'Disagree' % | 44.4 | 25.0 | 31.0 |
| 'No opinion' % | 5.6 | 7.5 | 6.9 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 58) | 18 | 40 | 58 |

**Table A2.6a View on closed areas/places, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 39.6 | 53.5 | 47.9 |
| 'Disagree' % | 37.5 | 36.6 | 37.0 |
| 'No opinion' % | 22.9 | 9.9 | 15.1 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 119) | 48 | 71 | 119 |

**Table A2.6b View on closed areas/places, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 44.4 | 72.5 | 63.8 |
| 'Disagree' % | 44.4 | 22.5 | 29.3 |
| 'No opinion' % | 11.1 | 5.0 | 6.9 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 58) | 18 | 40 | 58 |

**Table A2.7a View on restriction of numbers of fishers, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 29.2 | 28.2 | 28.6 |
| 'Disagree' % | 58.3 | 64.8 | 62.2 |
| 'No opinion' % | 12.5 | 7.0 | 9.2 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 119) | 48 | 71 | 119 |

**Table A2.7b View on restriction of numbers of fishers, sample respondents by type of fishery and fisher category, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 22.2 | 27.5 | 25.9 |
| **'Disagree' %** | 50.0 | 60.0 | 56.9 |
| **'No opinion' %** | 27.8 | 12.5 | 17.2 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.8a View on restriction of mesh sizes, post-harvest sample respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 50.0 | 81.7 | 68.9 |
| **'Disagree' %** | 25.0 | 18.3 | 21.0 |
| **'No opinion' %** | 25.0 | 0.0 | 10.1 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.8b View on restriction of mesh sizes, post-harvest sample respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 83.3 | 70.0 | 74.1 |
| **'Disagree' %** | 5.6 | 12.5 | 10.3 |
| **'No opinion' %** | 11.1 | 17.5 | 15.6 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.9a View on restriction for industrial gear, post-harvest sample respondents by gender, Kigoma Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 37.5 | 59.2 | 50.4 |
| **'Disagree' %** | 29.2 | 35.2 | 32.8 |
| **'No opinion' %** | 33.3 | 5.6 | 16.8 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.9b View on restriction for industrial gear, post-harvest sample respondents by gender, Rukwa Region, Tanzania.**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 55.6 | 57.5 | 56.9 |
| **'Disagree' %** | 27.8 | 17.5 | 20.7 |
| **'No opinion' %** | 16.6 | 25.0 | 22.4 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.10a View on prohibition for industrial gear, post-harvest sample respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 25.0 | 15.5 | 19.3 |
| **'Disagree' %** | 47.9 | 80.3 | 67.2 |
| **'No opinion' %** | 27.1 | 4.2 | 13.5 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.10b View on prohibition for industrial gear, post-harvest sample respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 38.9 | 42.5 | 41.4 |
| **'Disagree' %** | 38.9 | 37.5 | 37.9 |
| **'No opinion' %** | 22.2 | 20.0 | 20.7 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.11a View on restrictions for beach seines, post-harvest sample respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 27.1 | 43.7 | 37.0 |
| **'Disagree' %** | 43.8 | 52.1 | 48.7 |
| **'No opinion' %** | 29.1 | 4.2 | 14.3 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.11b View on restrictions for beach seines, post-harvest sample respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 44.4 | 52.5 | 50.0 |
| **'Disagree' %** | 38.9 | 32.5 | 34.5 |
| **'No opinion' %** | 16.7 | 15.0 | 15.5 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.12a View on prohibition for beach seines, post-harvest sample respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 10.4 | 11.3 | 10.9 |
| **'Disagree' %** | 60.4 | 85.9 | 75.6 |
| **'No opinion' %** | 29.2 | 2.8 | 13.5 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.12b View on prohibition for beach seines, post-harvest sample respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 38.9 | 20.0 | 25.9 |
| **'Disagree' %** | 38.9 | 70.0 | 60.3 |
| **'No opinion' %** | 22.2 | 10.0 | 13.8 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.13a View on restrictions for lift nets, post-harvest sample respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 14.6 | 29.6 | 23.5 |
| **'Disagree' %** | 56.3 | 69.0 | 63.9 |
| **'No opinion' %** | 29.1 | 1.4 | 12.6 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.13b View on restrictions for lift nets, post-harvest sample respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 50.0 | 42.5 | 44.8 |
| **'Disagree' %** | 27.8 | 45.0 | 39.7 |
| **'No opinion' %** | 22.2 | 12.5 | 15.5 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.14a View on prohibition for lift nets, post-harvest sample respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 6.3 | 5.6 | 5.9 |
| **'Disagree' %** | 64.6 | 50.7 | 56.3 |
| **'No opinion' %** | 29.1 | 43.7 | 37.8 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.14b View on prohibition for lift nets, post-harvest sample respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 50.0 | 15.0 | 25.9 |
| 'Disagree' % | 22.2 | 70.0 | 55.2 |
| 'No opinion' % | 27.8 | 15.0 | 18.9 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 58) | 18 | 40 | 58 |

**Table A2.15a View on fishing restrictions only to be decided by government, post-harvest sample respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 56.3 | 40.8 | 47.1 |
| 'No' % | 31.3 | 53.5 | 44.5 |
| 'No opinion' % | 12.5 | 5.6 | 8.4 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 119) | 48 | 71 | 119 |

**Table A2.15b View on fishing restrictions only to be decided by government, post-harvest sample respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Yes' % | 50.0 | 50.0 | 50.0 |
| 'No' % | 33.3 | 45.0 | 41.4 |
| 'No opinion' % | 16.7 | 5.0 | 8.6 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 58) | 18 | 40 | 58 |

**Table A2.16a View on 'should be more patrol boats,' post-harvest respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 70.8 | 76.1 | 73.9 |
| **'Disagree' %** | 16.7 | 22.5 | 20.2 |
| **'No opinion' %** | 12.5 | 1.4 | 5.9 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.16b View on 'should be more patrol boats,' post-harvest respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 83.3 | 72.5 | 75.9 |
| **'Disagree' %** | 5.6 | 25.0 | 19.0 |
| **'No opinion' %** | 11.1 | 2.5 | 5.1 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.17a View on 'more fishery scouts for enforcment,' post-harvest respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 64.6 | 64.8 | 64.7 |
| **'Disagree' %** | 33.3 | 32.4 | 32.8 |
| **'No opinion' %** | 2.1 | 2.8 | 2.5 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.17b View on 'more fishery scouts for enforcment,' post-harvest respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 72.2 | 70.0 | 70.7 |
| **'Disagree' %** | 22.2 | 30.0 | 27.6 |
| **'No opinion' %** | 5.6 | 0.0 | 1.7 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |

**Table A2.18a View on 'involve police more directly in fishery enforcment,' post-harvest respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 56.3 | 53.5 | 54.6 |
| 'Disagree' % | 33.3 | 45.1 | 40.3 |
| 'No opinion' % | 10.4 | 1.4 | 5.1 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 119) | 48 | 71 | 119 |

**Table A2.18b View on 'involve police more directly in fishery enforcment,' post-harvest respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 66.7 | 55.0 | 58.6 |
| 'Disagree' % | 27.8 | 45.0 | 39.7 |
| 'No opinion' % | 5.5 | 0.0 | 1.7 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 58) | 18 | 40 | 58 |

**Table A2.19a View on 'punish offending fishers,' post-harvest respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 79.2 | 94.4 | 88.2 |
| 'Disagree' % | 8.3 | 2.8 | 5.0 |
| 'No opinion' % | 12.5 | 2.8 | 6.8 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 119) | 48 | 71 | 119 |

**Table A2.19b View on 'punish offending fishers,' post-harvest respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| 'Agree' % | 77.8 | 95.0 | 89.7 |
| 'Disagree' % | 16.7 | 5.0 | 8.6 |
| 'No opinion' % | 5.5 | 0.0 | 1.7 |
| Total % | 100.0 | 100.0 | 100.0 |
| Total cases (N = 58) | 18 | 40 | 58 |

**Table A2.20a View on 'punish offending traders/consumers,' post-harvest respondents by gender, Kigoma Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 58.3 | 74.6 | 68.1 |
| **'Disagree' %** | 18.8 | 16.9 | 17.6 |
| **'No opinion' %** | 22.9 | 8.5 | 14.3 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 119) | 48 | 71 | 119 |

**Table A2.20b View on 'punish offending traders/consumers,' post-harvest respondents by gender, Rukwa Region, Tanzania**

| Response | Female | Male | Total |
|---|---|---|---|
| **'Agree' %** | 72.2 | 75.0 | 74.1 |
| **'Disagree' %** | 5.6 | 17.5 | 13.8 |
| **'No opinion' %** | 22.2 | 7.5 | 12.1 |
| **Total %** | 100.0 | 100.0 | 100.0 |
| **Total cases** (N = 58) | 18 | 40 | 58 |