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# THE GULFNET SAMPLE RESULTS OF FIVE CRUISE WITH THE *R/V TANGANYIKA EXPLORER*

**by**

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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, Tanzania, Democratic Republic of Congo 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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## GCP/RAF/271/FIN PUBLICATIONS

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

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# TABLE OF CONTENTS

**SUMMARY**

During the execution phase of Lake Tanganyika Research Project lake wide pelagic samples of macro and micro zooplankton were taken with the GULF V sampler during 5 cruises (from July 1995 to February 1998) while simultaneously establishing pelagic fish biomass with acoustic equipment. This document presents the different densities found during each cruise for 6 species groups: centropomids (all *Lates* spp.), clupeids (*Limnothrissa miodon* and *Stolothrissa tanganicae*), fish eggs (eggs of both centropomids and clupeids combined), shrimps (all shrimps including larvae), medusae (*Limnocnida tanganyicae*) and copepoda (cyclopoids and calanoids combined). The density of centropomids, clupeids and their eggs were very low and therefore are unreliable to base any elaborate conclusions on. The shrimp densities found during especially Nov. 1995 and Dec. 1997 indicate schooling behavior. The highest density of medusae was collected in the most northern part of the Lake in July 1995, in a relative shallow area very suitable for the sedentary polyp-stage of medusae. Copepoda were found in high densities lake wide, especially in Nov. 1995.

## 1. INTRODUCTION

The zooplankton community in Lake Tanganyika is morphologically diverse with prominent major taxa such as protozoans, crustaceans, coelenterates and larval fishes. Though the community is diverse, it is noteworthy that each of these major taxa have relatively few species in the pelagic ecosystem of the Lake. Another remarkable characteristic of the zooplankton community is the high percentage of endemic species as for example all the shrimp species and the coelenterate *Limnocnida tanganyicae* (Coulter, 1991).

Over a period of 3 years (August 1993 - July 1996), Lake Tanganyika Research Project (LTR) has conducted a weekly sampling program, results of which were published in numerous technical documents. The zooplankton sampling component mainly concentrated on examining abundances of cyclopoids and calanoids. The results of the zooplankton research component suggested that the pelagic ecosystem at the north end of the Lake could be characterized as a "Clupeids - Cyclopoida - medusa" community, and at the south end of the Lake as a "*Lates stappersii* - Calanoida - shrimp" community (Kurki, 1996; Mannini *et al*, 1996; Bosma *et al*, 1997).

## 2. OBJECTIVES

In order to confirm (or contradict) this theory, lake wide pelagic samples of macro and micro zooplankton were taken with the GULF V sampler during 5 cruises (from July 1995 to February 1998) while simultaneously establishing pelagic fish biomass with acoustic equipment. The GULF V results are presented and briefly discussed in this document. A more elaborate discussion on the characteristics of the pelagic ecosystem will be presented in the final document, representing the combined analyzed data of all the acoustic cruises (Szczucka and Mannini, in prep.).

## 3. MATERIALS AND METHODS

GULF V nets were used to collect macro zooplankton such as shrimps, fish larvae and medusae and micro zooplankton such as cyclopoids and calanoids from the pelagic waters of Lake Tanganyika. For this purpose 2 GULF nets were used, one with the mesh-size of 250µm for the collection of macro zooplankton, and one with the mesh-size of 100µm for the collection of micro zooplankton. The sampling with the GULF V sampler on board the R/V Tanganyika Explorer followed the method described by Kurki (1996). The samples collected with both nets were stored in separate sample bottles and preserved with 40% formaldehyde solution for further analysis (identification and counting) in the laboratory.

For the subsampling of the macro zooplankton samples a Folsom splitter was used. Each sample was split until a subsample of approximately 300 specimens was reached. Of this subsample all specimens were identified and counted and the length of the first 50 specimens of each species was measured (excluding medusae). For identification of the different shrimp species, descriptions by Calman (1906) were consulted. The centropomid larvae, the clupeid

larvae, and the eggs of centropomids and clupeids were identified according to the descriptions given by Kinoshita & Tshibangu (1989), Tshibangu & Kinoshita (1995) and Kinoshita (pers. comm.) respectively.

The subsampling, identification, and counting of the micro zooplankton samples followed instructions of Vuorinen (1993) and Kurki (1993).

During the cruises the GULF samples were taken in between trawl hauls. The date and position of the GULF sampling stations for each cruise are given in Annex 1, table A1.

Cruise numbers mentioned throughout the report are as follows:

| | | | |
|---|---|---|---|
| 1st cruise nr.: | 9502 | mid dry season | Jul. 1995 |
| 2nd cruise nr.: | 9505 | start rain season | Nov. 1995 |
| 3rd cruise nr.: | 9607 | end rain season | Apr. 1996 |
| 4th cruise nr.: | 9717 | mid rain season | Dec. 1997 |
| 5th cruise nr.: | 9819 | mid rain season | Feb. 1998 |

## 4. RESULTS & DISCUSSION

In both the GULF 250µm net samples and the GULF 100µm net samples the following species were identified (table 1).

Table 1: The macro- and micro zooplankton species collected with GULF V sampler from the pelagic waters of Lake Tanganyika.

Macro zooplankton

| | | |
|---|---|---|
| * | centropomids | - *Lates stappersii* |
| | | - *L. angustifrons* |
| | | - *L. mariae* |
| | | - *L. microlepis* |
| * | clupeids | - *Limnothrissa miodon* |
| | | - *Stolothrissa tanganicae* |
| * | shrimps | - *Palaemon moorei* |
| | | - *Limnocaridina parvula* |
| | | - *L. latipes* |
| * | medusae | - *Limnocnida tanganyicae* |

Micro zooplankton

| | | |
|---|---|---|
| * | cyclopoids | - *Microcyclops cunningtoni*[1] |
| | | - *Thermocyclops oblongatos*[1] |
| | | - *Mesocyclops aequatorialis aequatorialis*[2] |
| * | calanoids | - *Tropodiaptomus simplex* |

[1] 'small cyclopoids', see annex 2
[2] 'big cyclopoids', see annex 2

Table 2 provides the average length of all macro zooplankton species collected of all cruises. For the shrimps only carapace length was measured.

**Table 2: Average length of macro zooplankton collected with GULF V sampler (250µm net) in the pelagic waters of Lake Tanganyika**

| Species | Average length (mm) |
|---|---|
| *Lates stappersii* | *4.15* |
| *L. angustifrons* | *4.35* |
| *L. mariae* | *4.45* |
| *L. microlepis* | 3.77 |
| *Limnothrissa miodon* | *9.10* |
| *Stolothrissa tanganicae* | 7.70 |
| *Palaemon moorei* | *1.44* |
| *P. moorei* larvae | *0.66* |
| *Limnocaridina parvula* | *1.13* |
| *L. parvula larvae* | 0.60 |
| *L. latipes* | *0.57* |

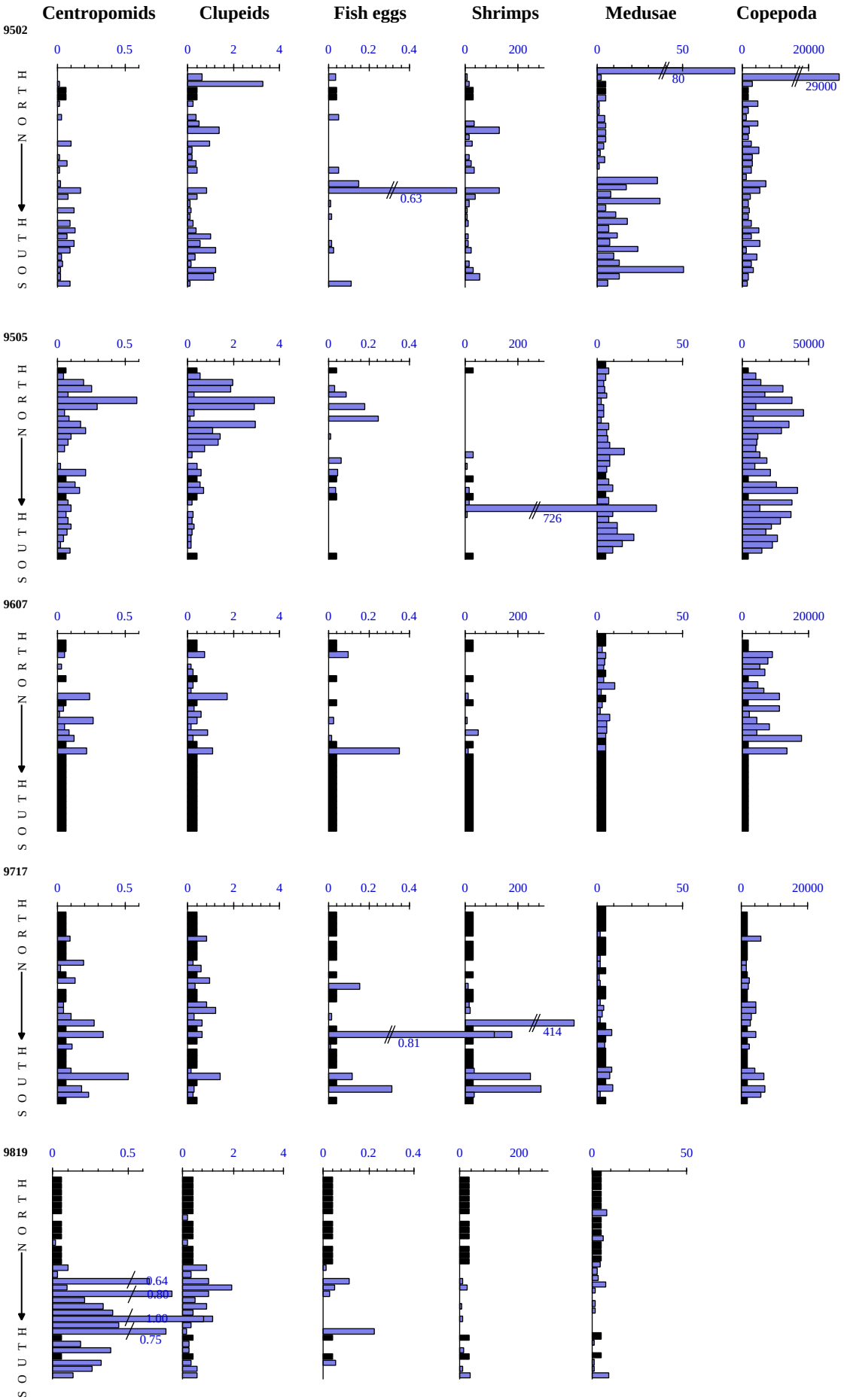
The density of both the macro and micro plankters are given in tables A2 - A10, annex 2. The micro zooplankton of the last cruise (9819) were unfortunately not yet analyzed at the time this document went to press.

The density of the plankters are also presented in bargraphs, where the top bar represents the most northern sample site and the bottom bar the most southern sample site, graphs A1 - A5, annex 3.

A similar way of displaying the results was used in the graph 1, page 6, presenting the different densities found during each cruise for 6 species groups: centropomids (all *Lates spp*.), clupeids (*Limnothrissa miodon* and *Stolothrissa tanganicae*), fish eggs (eggs of both centropomids and clupeids combined), shrimps (all shrimps including larvae), medusae (*Limnocnida tanganyicae*) and copepoda (cyclopoids and calanoids combined).

It should be noted that by towing the GULF sampler at a certain speed behind a boat, the exact depth of the sampler is unknown. Therefore, number per surface meter$^2$ cannot be calculated. In order to ensure samples are taken from the complete watercolumn containing the zooplankters, additional (deeper) anaerobic water was filtered during the GULF sample trawl. This, consequently, decreased the density values calculated with the simple formula of number of specimens divided by amount of water filtered.

All fish larvae (including eggs) were in low abundance compared to medusae, shrimps and copepoda. Even though the numbers are low, it is remarkable that the densities of both centropomid and clupeid larvae are relatively high in Nov. 1995 and Feb. 1998. The November peak coincides with a remarkable peak in abundance of copepoda. Contrary to the general belief that shrimps are the main food source for clupeids, Chéné (1975) concluded that calanoids were the main food source even for the adult *Stolothrissa tanganicae*. The young centropomids feed primarily on copepoda, especially calanoids (Ellis, 1978).




Graph 1: Density of the 6 species groups collected with the GULF V sampler during 5 cruises (cruise nr. 9502, 9505, 9607, 9717, 9819), plotted against the latitude along Lake Tanganyika.
= no sample taken in that area

Aro and Mannini (1995) could not find a clear reproductive pattern or areal timing of peak spawning of the centropomid, *Lates stappersii*, and clupeids. A similar conclusion can be drawn from the fish egg density found with the GULF sampler. Furthermore, the density of fish eggs is very low and therefore is unreliable to base any particular conclusions on.

On the other hand, the occasional relative high density of shrimps caught with the GULF sampler seem to indicate that shrimps occur preferably in large schools. This was earlier also remarked upon by Chéné (1975). Coulter mentions that because of the schooling behavior of shrimps, copepoda are the staple food of clupeids, unless a school of shrimp is encountered, after which selective feeding on shrimp only is to be expected. A general low density of shrimps (from 1-20 $nm^{-3}$) is non-visible on the graph compared with the peak abundances of the schools. These schools were found only in Nov. 1995 and Dec. 1997 (cruises 9505 and 9717). This coincides with a peak found in the north end of the Lake found in the months Oct. - Nov. 1981 by Narita *et al*. (1986). However, a second peak found in mar. - Apr. 1982 was not found in April 1996 (cruise 9607). When a high density of shrimps was collected (cruises 9505 and 9717), no other either extreme high density or otherwise low density was noted for any of the other species groups. The reason could be that they are preyed upon by post larval pelagic fish only and that they feed purely on phytoplankton. In either case they do not have a direct link with the other zooplankton sampled.

The highest density of medusae was collected in the most northern part of the Lake in July 1995 (cruise 9502). This sample site was very close to the traditional sample site used during the weekly sampling program of LTR. A similar high density there was also noted (Kurki & Vuorinen, 1995, Kurki, 1996 and Bosma, 1997). Kurki (1996) suggested that the relative shallow northern area is probably very suitable for the sedentary polyp-stage and therefore enhances medusae productivity. At the same sampling site, the highest density of copepoda was collected. According to Dumont (1994) medusae feed predominantly on fish eggs but recent studies proof otherwise. No fish eggs but copepoda and pico phyto-plankton are found in stomach of medusae (Salonen & Sarvala, pers. comm.).

A high copepoda density does coincide with the highest medusae density, both found in the most northern sample site. But during the following cruise (9505, Nov. 1995), a overall higher density is found for almost every sample site from north to south. Note the different $nm^{-3}$ scale for this graph, 50 000 i.s.o. 20 000 $nm^{-3}$. During the regular sampling period from 1993 to 1996 a primary peak was found yearly in November off Kigoma (Kurki, 1996). This was thought to be linked with a maximum abundance of phytoplankton (Hecky, 1991) and to secondary upwelling in the Lake (Plisnier *et al*, 1996). This is contrary to that found by Muhigwa *et al* (1996). Their data suggested that the dry season (June - Aug.) rather than the wet season (Oct. - may) is the actual reproductive period for the copepoda in Lake Tanganyika. The only samples taken during dry season were in July 1995 (cruise 9502) and the average copepoda density seems similar to the density measured in Nov. 1997 (cruise 9717), and less then caught in April 1996. The most likely impetus for high copepoda reproduction is probably 'bottom-up' controlled. The pulsed primary production, which is a characteristic of the

upwelling system in Lake Tanganyika (Plisnier *et al*., 1996), could be a main reason for the variable copepoda density over the years. Another, yet not fully investigated, energy source for secondary producers is the bacterial ecosystem (Järvinen *et al*, 1996). Future research may show which is the main catalyst for copepoda reproduction.

## 5. CONCLUSION

The density of macro and micro zooplankton collected during these cruises provides more information but not the total answer on the most interesting question: how is the ecosystem of Lake Tanganyika regulated? These data are a mere piece of the puzzle which constitutes the ecosystem of Lake Tanganyika. If combined with the pelagic fish biomass data, established with acoustic equipment during the same cruises, a model might be composed, which could clarify many of these remaining questions.

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Table A1: Date and position (latitude and longitude) of the GULF sampling stations of each cruise.

| Cruise nr | G Station no. | Date dd/mm/yy | Sampling site Position Latitude (S) | Longitude (E) |
|---|---|---|---|---|
| 9502 | 1 | 15/06/95 | 03º26,50 | 29º17,71 |
| | 2 | 6/17/99 | 03º39,89 | 29º12,67 |
| | 3 | 16/06/95 | 04º12,56 | 29º25,84 |
| | 4 | 6/18/99 | 04º32,08 | 29º38,06 |
| | 5 TEST | 6/18/99 | 04º43,87 | 29º27,61 |
| | 5 | 6/18/99 | 04º34,51 | 29º10,28 |
| | 6 | 6/18/99 | 04º42,95 | 29º23,48 |
| | 8 | 18/06/95 | 05º07,18 | 29º37,62 |
| | 9 | 20/06/95 | 05º38,72 | 29º51,85 |
| | 10 | 20/06/95 | 05º53,02 | 29º37,54 |
| | 11 | 20/06/95 | 06º04,48 | 29º19,56 |
| | 12 | 20/06/95 | 06º10,13 | 29º42,60 |
| | 13 | 21/06/95 | 06º22,16 | 29º37,63 |
| | 14 | 21/06/95 | 06º32,34 | 29º57,41 |
| | 15 | 21/06/95 | 06º37,10 | 30º12,62 |
| | 16 | 22/06/95 | 06º52,32 | 30º07,24 |
| | 18 | 22/06/95 | 07º22,10 | 30º22,51 |
| | 19 | 23/06/95 | 07º37,65 | 30º12,82 |
| | 20 | 23/06/95 | 07º49,89 | 30º44,73 |
| | 21 | 23/06/95 | 08º10,21 | 30º52,21 |
| | 23 | 25/06/95 | 08º35,33 | 30º53,00 |
| | 24 | 25/06/95 | 08º22,46 | 30º32,71 |
| | 25 | 26/06/95 | 07º46,79 | 30º36,64 |
| | 26 | 26/06/95 | 07º34,72 | 30º36,87 |
| | 27 | 27/06/95 | 07º05,53 | 29º59,36 |
| | 28 | 27/06/95 | 06º37,56 | 29º32,11 |
| | 29 | 28/06/95 | 05º54,20 | 29º19,43 |
| | 30 | 28/06/95 | 05º21,71 | 29º22,47 |
| | 30b | 28/06/95 | 05º07,16 | 29º28,57 |
| | 31 | 29/06/95 | 04º21,80 | 29º22,69 |
| | 32 | 29/06/95 | 04º21,80 | 29º22,69 |
| 9505 | 1 | 11/17/95 | 03º37,29 | 29º15,73 |
| | 2 | 11/17/95 | 03º47,51 | 29º12,01 |
| | 3 | 11/18/95 | 04º07,80 | 29º21,54 |
| | 4 | 11/18/95 | 04º17,76 | 29º17,34 |
| | E 1 | 11/19/95 | 04º27,96 | 29º22,91 |
| | 5 | 11/19/95 | 04º37,09 | 29º28,00 |
| | 6 | 11/19/95 | 04º47,22 | 29º17,83 |
| | 7 | 11/20/95 | 05º03,15 | 29º31,54 |
| | 8 | 11/20/95 | 05º15,24 | 29º24,01 |
| | 9 | 11/22/95 | 05º37,78 | 29º33,90 |
| | 10 | 11/22/95 | 05º47,54 | 29º22,94 |
| | 11 | 11/23/95 | 06º07,58 | 29º38,02 |
| | 12 | 11/23/95 | 06º17,89 | 29º32,57 |
| | 13 | 11/24/95 | 06º37,74 | 29º52,45 |
| | 14 | 11/24/95 | 06º47,71 | 29º47,67 |
| | 15 | 11/25/95 | 07º07,18 | 30º25,04 |
| | 16 | 11/25/95 | 07º17,60 | 30º17,09 |
| | E 2 | 11/25/95 | 07º29,91 | 30º22,19 |
| | 17 | 11/26/95 | 07º40,48 | 30º32,20 |
| | 19 | 11/27/95 | 08º06,25 | 30º45,73 |
| | 20 | 11/27/95 | 08º17,13 | 30º36,97 |
| | 21 | 11/29/95 | 08º22,85 | 31º05,20 |
| | 22 | 11/29/95 | 07º49,88 | 30º45,26 |
| | 23 | 11/29/95 | 07º11,48 | 30º30,37 |
| | 25 | 12/1/95 | 05º50,63 | 29º52,63 |
| | 26 | 12/1/95 | 05º01,81 | 29º42,85 |
| | 27 | 12/2/95 | 04º37,04 | 29º37,81 |
| | 28 | 12/3/95 | 04º09,86 | 29º29,09 |

| Cruise nr | G Station no. | Date dd/mm/yy | Sampling site Position Latitude (S) | Longitude (E) |
|---|---|---|---|---|
| 9607 | 1 | 4/3/96 | 03º40,26 | 29º14,86 |
| | 2 | 4/3/96 | 03º52,58 | 29º14,82 |
| | 3 | 4/4/96 | 04º07,45 | 29º21,53 |
| | 4 | 4/4/96 | 04º17,60 | 29º17,47 |
| | 5 | 4/5/96 | 04º32,78 | 29º32,99 |
| | 6 | 4/5/96 | 04º47,71 | 29º17,88 |
| | 7 | 4/7/96 | 05º00,16 | 29º32,10 |
| | 8 | 4/7/96 | 05º10,11 | 29º27,49 |
| | 9 | 4/7/96 | 05º20,17 | 29º22,44 |
| | 10 | 4/8/96 | 05º30,01 | 29º42,43 |
| | 11 | 4/8/96 | 05º37,59 | 29º34,26 |
| | 12 | 4/8/96 | 05º47,11 | 29º24,21 |
| | 13 | 4/9/96 | 06º03,05 | 29º40,01 |
| | 14 | 4/9/96 | 06º20,13 | 29º31,07 |
| 9717 | 1 | 23 11 97 | 04º06,52 | 29º21,79 |
| | 2 | 24 11 97 | 04º44,14 | 29º09,66 |
| | 3 | 25 11 97 | 04º57,64 | 29º15,09 |
| | 4 | 26 11 97 | 05º16,36 | 29º12,66 |
| | 5 | 27 11 97 | 05º51,97 | 29º25,21 |
| | 6 | 28 11 97 | 06º29,02 | 29º50,68 |
| | 7 | 29 11 97 | 07º04,85 | 30º19,26 |
| | 8 | 02 12 97 | 07º41,76 | 30º14,31 |
| | 9 | 02 12 97 | 08º21,76 | 30º47,20 |
| | 10 | 04 12 97 | 08º25,51 | 30º57,38 |
| | 11 | 05 12 97 | 07º50,15 | 30º42,09 |
| | 12 | 06 12 97 | 06º47,71 | 29º49,82 |
| | 13 | 07 12 97 | 06º17,91 | 29º37,18 |
| | 14 | 07 12 97 | 05º51,77 | 29º43,91 |
| | 15 | 08 12 97 | 05º19,71 | 29º32,63 |
| 9819 | 1 | 2/6/02 | 05º02,74 | 29º14,46 |
| | 2 | 2/7/02 | 05º59,82 | 29º42,57 |
| | 3 | 2/7/02 | 06º17,46 | 29º36,70 |
| | 4 | 2/8/02 | 06º31,95 | 29º55,50 |
| | 5 | 2/8/02 | 07º00,22 | 29º53,39 |
| | 6 | 2/9/02 | 07º15,13 | 30º22,78 |
| | 7 | 2/9/02 | 07º49,07 | 30º39,98 |
| | 8 | 2/10/02 | 08º16,68 | 30º44,76 |
| | 9 | 2/10/02 | 08º29,43 | 30º55,45 |
| | 10 | 2/11/02 | 08º24,97 | 30º44,73 |
| | 11 | 2/12/02 | 07º47,34 | 30º17,40 |
| | 12 | 2/13/02 | 07º16,81 | 30º10,12 |
| | 13 | 2/13/02 | 06º59,82 | 30º19,62 |
| | 14 | 2/13/02 | 06º50,07 | 29º59,98 |
| | 15 | 2/14/02 | 06º38,31 | 29º35,01 |
| | 16 | 2/14/02 | 06º17,41 | 29º23,01 |
| | 17 | 2/15/02 | 05º51,85 | 29º30,35 |
| | 18 | 2/19/02 | 04º24,90 | 29º22,77 |

# Research for the management of the Fisheries on lake Tanganyika

**Gulf samples, 250 µm net**

**Survey number** 9502

**Analyzed by:** Kalangali Muhoza Bosma

**NUMBER PER METER3**

Shrimp species: *P. moorei* *A. brevirostris* *L. parvula* *L. latipes*
*C. cunningtoni* *A. longirostris* *L. retiarius* *L. socius*
*C. paski* *L. tanganyikae* *L. spinipes*
*C. minuta* *L. similis*

| Sample number | Date | Fish larvae | | | | | | Fish Eggs | | Shrimps | | | | Unidentified | | Jelly-Fish | Other | Remarks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Centropomids | | | | Clupeids | | | | | | | | | | | | | |
| (G.....) | (dd/mm/yy | *L. stappersi* | *L. mariae* | *L. angustifrons* | *L. microlepis* | *Stolothrissa* | *Limnothrissa* | centropomids | clupeids | *P. moorei* | *L. parvula* | *0* | *0* | larvae (short l.) | larvae (long l.) | *L. tanganyicae* | | | |
| 1 | 15 06 95 | 0 | 0 | 0 | 0 | 0.38 | 0.242 | 0 | 0.035 | 0.104 | 1.002 | 0 | 0 | 4.905 | 0 | 80.38 | 0 | | |
| 2 | 16 06 95 | 0 | 0.016 | 0 | 0 | 1.8 | 1.487 | 0 | 0 | 0.047 | 0.861 | 0 | 0 | 13.27 | 0.282 | 2.254 | 0 | | |
| 3 | 16 06 95 | 0 | 0.017 | 0 | 0 | 0.067 | 0.168 | 0 | 0 | 0 | 0.017 | 0 | 0 | 0.453 | 0.084 | 4.885 | 0 | | |
| 4 | 17 06 95 | 0 | 0 | 0 | 0 | 0.198 | 0.306 | 0 | 0 | 0.252 | 0.577 | 0 | 0 | 33.58 | 0.216 | 4.414 | 0 | | |
| 5 | 17 06 95 | 0 | 0 | 0.008 | 0 | 0.638 | 0.709 | 0 | 0 | 0.008 | 1.513 | 0 | 0 | 129.1 | 1.261 | 5.043 | 0 | | |
| 6 | 17 06 95 | 0 | 0 | 0.008 | 0 | 0.024 | 0 | 0 | 0 | 0 | 0.254 | 0 | 0 | 14.74 | 0 | 4.701 | 0 | | |
| 8 | 18 06 95 | 0 | 0 | 0.054 | 0.045 | 0.523 | 0.451 | 0 | 0 | 0.135 | 0.577 | 0 | 0 | 25.41 | 0.144 | 4.909 | 0 | | |
| 9 | 20 06 95 | 0.021 | 0.01 | 0 | 0.041 | 0.166 | 0.197 | 0 | 0 | 0.041 | 3.56 | 0 | 0 | 18.3 | 1.159 | 4.471 | 0 | | |
| 10 | 20 06 95 | 0 | 0 | 0.017 | 0 | 0.238 | 0.161 | 0 | 0.051 | 0.323 | 5.433 | 0 | 0 | 27.84 | 0.679 | 1.477 | 0 | | |
| 11 | 20 06 95 | 0 | 0 | 0.021 | 0 | 0 | 0 | 0.084 | 0.063 | 0.021 | 0 | 0 | 0 | 1.81 | 0.463 | 35.36 | 0 | | |
| 12 | 20 06 95 | 0.051 | 0.026 | 0.013 | 0.077 | 0.63 | 0.167 | 0.502 | 0.129 | 0.167 | 9.053 | 0 | 0 | 119.3 | 0 | 17.28 | 0 | | |
| 13 | 21 06 95 | 0 | 0 | 0.058 | 0.017 | 0.2 | 0.2 | 0 | 0 | 0.1 | 5.853 | 0 | 0 | 31.66 | 0 | 7.981 | 0 | | |
| 14 | 21 06 95 | 0 | 0 | 0 | 0.01 | 0.077 | 0.029 | 0.01 | 0 | 0.249 | 2.417 | 0 | 0 | 12.39 | 0.729 | 36.8 | 0 | | |
| 15 | 21 06 95 | 0.05 | 0.008 | 0.033 | 0.033 | 0.108 | 0.017 | 0 | 0 | 0.033 | 0.1 | 0 | 0 | 7.632 | 0.265 | 4.911 | 0 | | |
| 16 | 22 06 95 | 0.024 | 0 | 0.016 | 0.055 | 0.142 | 0.079 | 0 | 0 | 0.071 | 0.693 | 0 | 0 | 12.28 | 0.378 | 17.51 | 0 | | |
| 18 | 22 06 95 | 0.017 | 0.017 | 0.009 | 0.026 | 0.605 | 0.383 | 0 | 0 | 0.196 | 0.341 | 0 | 0 | 9.812 | 0.204 | 11.62 | 0 | | |
| 19 | 23 06 95 | 0.015 | 0 | 0.015 | 0.062 | 0.239 | 0.97 | 0.023 | 0 | 0.193 | 4.682 | 0 | 0 | 18.97 | 0.246 | 23.71 | 0 | | |
| 20 | 23 06 95 | 0.007 | 0 | 0.007 | 0.022 | 0.101 | 0.058 | 0 | 0 | 0.094 | 0.086 | 0 | 0 | 15.54 | 0.432 | 12.8 | 0 | | |
| 21 | 23 06 95 | 0 | 0 | 0.009 | 0.017 | 0.744 | 0.462 | 0 | 0 | 0.197 | 17.1 | 0 | 0 | 13.2 | 0.137 | 50.63 | 0 | | |
| 23 | 25 06 95 | 0.056 | 0 | 0.008 | 0.032 | 0.056 | 0.024 | 0.008 | 0.103 | 0 | 0 | 0 | 0 | 3.02 | 0.223 | 5.944 | 0 | | |
| 24 | 25 06 95 | 0.016 | 0 | 0.008 | 0 | 0.962 | 0.167 | 0 | 0 | 0.199 | 9.536 | 0 | 0 | 43.8 | 0.127 | 12.74 | 0 | | |
| 25 | 26 06 95 | 0 | 0.006 | 0.013 | 0.013 | 0.139 | 0.195 | 0 | 0 | 0 | 0.063 | 0 | 0 | 1.297 | 0.038 | 9.803 | 0 | | |
| 26 | 26 06 95 | 0.034 | 0.007 | 0.02 | 0.061 | 0.35 | 0.202 | 0.013 | 0 | 0.128 | 0 | 0 | 0 | 12.11 | 0.404 | 7.378 | 0 | | |
| 27 | 27 06 95 | 0.047 | 0.027 | 0.02 | 0.033 | 0.194 | 0.187 | 0 | 0 | 0 | 0.134 | 0 | 0 | 1.472 | 0.054 | 6.886 | 0 | | |
| 28 | 27 06 95 | 0 | 0 | 0 | 0.007 | 0.096 | 0.014 | 0 | 0.014 | 0.021 | 0 | 0 | 0 | 6.803 | 0.11 | 11.21 | 0 | | |
| 29 | 28 06 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 30 | 28 06 95 | 0 | 0 | 0.014 | 0 | 0.078 | 0.12 | 0 | 0 | 0.028 | 0.579 | 0 | 0 | 16.19 | 0.028 | 1.596 | 0 | | |
| 30B | 28 06 95 | 0 | 0 | 0.008 | 0 | 0.135 | 0.045 | 0 | 0 | 0.15 | 0.09 | 0 | 0 | 1.863 | 0 | 3.681 | 0 | | |
| 31 | 29 06 95 | 0 | 0 | 0.007 | 0 | 0 | 0.014 | 0 | 0 | 0.014 | 0.021 | 0 | 0 | 1.365 | 0.035 | 1.232 | 0 | | |
| 32 | 29 06 95 | 0 | 0 | 0.028 | 0 | 0.021 | 0.327 | 0.042 | 0.007 | 0.007 | 0 | 0 | 0 | 1.56 | 0.111 | 1.358 | 0 | | |

**Research for the management of the Fisheries on lake Tanganyika**

**R/V Explorer samples - Gulf net**

**100µm Gulf net**

**All bottles were subsampled; 1 or 2 ml per bottle was counted**

**#Value!: more than 200 specimens/too many to count**

**CRUISE: 9502**

**DEPTH: 0-300 m (at 50m intervals)**

**Counting team:KAOMA/ZULU**

| | Diaptomidae | | | | | Cyclopidae, big | | | | | Cyclopidae, small | | | | | Total | Jelly | Shrimp | Free | Fish | Vor | Oth | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gulf station | M | F | Ov | Co | Na | M | F | Ov | Co | Na | M | F | Ov | Co | Na | Copepoda | fish | | Eggs | Larvae | | | |
| 1 | 2004.7 | 7016.6 | 668.2 | 1002.4 | 2004.7 | 0.0 | 334.1 | 0.0 | 6682.5 | 8019.0 | 0.0 | 0.0 | 334.1 | 668.2 | 334.1 | 29068.8 | 11360.2 | 2338.9 | 10692.0 | 334.1 | 0 | 0 | 0 |
| 2 | 543.4 | 135.8 | 0.0 | 135.8 | 407.5 | 271.7 | 815.1 | 0.0 | 0.0 | 950.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3260.3 | 950.9 | 1494.3 | 1222.6 | 135.8 | 0 | ######## | 0 |
| 3 | 759.0 | 151.8 | 303.6 | 303.6 | 1366.1 | 607.2 | 0.0 | 151.8 | 151.8 | 455.4 | 0.0 | 0.0 | 151.8 | 0.0 | 151.8 | 4553.8 | 759.0 | 0.0 | 303.6 | 0.0 | 0 | 0 | 0 |
| 4 | 431.8 | 108.0 | 108.0 | 539.8 | 755.7 | 215.9 | 215.9 | 0.0 | 647.7 | 1295.4 | 215.9 | 0.0 | 0.0 | 0.0 | 0.0 | 4534.0 | 215.9 | 1187.5 | 2267.0 | 0.0 | 9715.79 | 0 | 0 |
| 5 | 79.0 | 316.1 | 316.1 | 395.2 | 395.2 | 158.1 | 79.0 | 0.0 | 474.2 | 79.0 | 0.0 | 0.0 | 0.0 | 0.0 | 39.5 | 2331.5 | 39.5 | 5137.2 | 1383.1 | 39.5 | 1422.62 | 158.069 | shrimp with 18 egg |
| 6 | 297.6 | 496.0 | 198.4 | 99.2 | 347.2 | 148.8 | 99.2 | 0.0 | 49.6 | 99.2 | 0.0 | 0.0 | 0.0 | 49.6 | 49.6 | 1934.5 | 148.8 | 446.4 | 1289.7 | 0.0 | 843.234 | 0 | 0 |
| 8 | 646.9 | 323.5 | 0.0 | 242.6 | 566.0 | 80.9 | 323.5 | 0.0 | 485.2 | 242.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2911.1 | 404.3 | 2830.2 | 10350.5 | 646.9 | 3315.39 | 80.8632 | shrimp with 6 eggs |
| 9 | 273.9 | 342.3 | 958.5 | 136.9 | 205.4 | 136.9 | 890.1 | 0.0 | 0.0 | 205.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3149.4 | 273.9 | 1163.9 | 205.4 | 0.0 | 753.121 | 68.4655 | shrimp with 8eggs |
| 10 | 220.4 | 629.8 | 31.5 | 251.9 | 63.0 | 94.5 | 251.9 | 0.0 | 220.4 | 913.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2676.5 | 0.0 | 661.3 | 409.4 | 0.0 | 755.728 | 0 | 0 |
| 11 | 77.6 | 620.8 | 77.6 | 931.2 | 620.8 | 155.2 | 2328.0 | 0.0 | 310.4 | 1940.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7061.5 | 698.4 | 77.6 | 0.0 | 0.0 | 0 | 0 | 0 |
| 12 | 301.1 | 1053.8 | 75.3 | 526.9 | 225.8 | 75.3 | 1053.8 | 0.0 | 225.8 | 1656.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5193.7 | 225.8 | 2785.1 | 2333.4 | 0.0 | 0 | 0 | 0 |
| 13 | 202.7 | 932.5 | 40.5 | 40.5 | 121.6 | 0.0 | 243.3 | 0.0 | 283.8 | 689.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2554.4 | 243.3 | 892.0 | 1094.7 | 0.0 | 0 | 0 | 0 |
| 14 | 235.8 | 117.9 | 0.0 | 275.1 | 235.8 | 196.5 | 393.0 | 0.0 | 117.9 | 235.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1807.6 | 353.7 | 825.2 | 3772.5 | 0.0 | 0 | 0 | 0 |
| 15 | 165.1 | 371.4 | 165.1 | 454.0 | 330.2 | 82.5 | 123.8 | 0.0 | 206.4 | 206.4 | 82.5 | 0.0 | 41.3 | 0.0 | 41.3 | 2269.9 | 784.2 | 4952.6 | 1196.9 | 0.0 | 0 | 0 | 0 |
| 16 | 391.1 | 279.4 | 0.0 | 447.0 | 335.3 | 111.8 | 502.9 | 55.9 | 223.5 | 111.8 | 55.9 | 0.0 | 0.0 | 55.9 | 111.8 | 2682.1 | 335.3 | 1061.6 | 2626.2 | 0.0 | 0 | 0 | 0 |
| 18 | 288.0 | 822.9 | 41.1 | 288.0 | 246.9 | 123.4 | 82.3 | 0.0 | 534.9 | 452.6 | 41.1 | 0.0 | 0.0 | 41.1 | 0.0 | 2962.3 | 205.7 | 1604.6 | 1481.2 | 0.0 | 781.726 | 0 | 0 |
| 19 | 183.3 | 476.6 | 73.3 | 73.3 | 36.7 | 36.7 | 73.3 | 0.0 | 146.7 | 146.7 | 73.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1319.9 | 36.7 | 1063.2 | 4399.7 | 0.0 | 256.646 | 0 | 0 |
| 20 | 470.8 | 269.0 | 33.6 | 168.1 | 100.9 | 134.5 | 201.8 | 0.0 | 571.7 | 672.5 | 33.6 | 0.0 | 0.0 | 33.6 | 33.6 | 2723.8 | 100.9 | 1883.1 | 1647.7 | 0.0 | 1311.46 | 0 | 0 |
| 21 | 60.9 | 121.9 | 0.0 | 182.8 | 1096.7 | 243.7 | 426.5 | 0.0 | 426.5 | 548.4 | 121.9 | 0.0 | 0.0 | 60.9 | 60.9 | 3351.2 | 2315.3 | 914.0 | 548.4 | 0.0 | 0 | 0 | 0 |
| 23 | 122.8 | 98.3 | 24.6 | 196.5 | 196.5 | 122.8 | 221.1 | 0.0 | 98.3 | 565.0 | 24.6 | 0.0 | 0.0 | 0.0 | 24.6 | 1695.0 | 270.2 | 958.1 | 466.8 | 0.0 | 0 | 0 | 0 |
| 24 | 337.2 | 463.7 | 42.2 | 379.4 | 42.2 | 42.2 | 126.5 | 0.0 | 210.8 | 84.3 | 84.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1812.5 | 716.6 | 1222.4 | 168.6 | 0.0 | 0 | 0 | 0 |
| 25 | 235.7 | 209.6 | 131.0 | 209.6 | 78.6 | 471.5 | 523.9 | 0.0 | 340.5 | 1964.6 | 26.2 | 0.0 | 0.0 | 26.2 | 104.8 | 4322.0 | 131.0 | 419.1 | 26.2 | 0.0 | 0 | 0 | 0 |
| 26 | 156.4 | 531.8 | 31.3 | 219.0 | 0.0 | 93.8 | 375.4 | 0.0 | 31.3 | 3628.6 | 31.3 | 0.0 | 0.0 | 93.8 | 93.8 | 5286.6 | 156.4 | 813.3 | 62.6 | 0.0 | 0 | 0 | 0 |
| 27 | 271.8 | 332.2 | 181.2 | 90.6 | 30.2 | 211.4 | 422.8 | 0.0 | 332.2 | 2868.8 | 30.2 | 30.2 | 0.0 | 30.2 | 60.4 | 4892.1 | 120.8 | 181.2 | 60.4 | 0.0 | 0 | 0 | 0 |
| 28 | 57.3 | 57.3 | 1060.0 | 85.9 | 114.6 | 57.3 | 229.2 | 0.0 | 85.9 | 114.6 | 28.6 | 0.0 | 0.0 | 28.6 | 85.9 | 2005.4 | 573.0 | 429.7 | 1289.2 | 0.0 | ######## | 0 | 0 |
| 29 | 0.0 | 43.2 | 215.9 | 0.0 | 43.2 | 86.4 | 215.9 | 0.0 | 129.5 | 345.4 | 0.0 | 0.0 | 0.0 | 43.2 | 43.2 | 1165.9 | 1252.2 | 215.9 | 86.4 | 0.0 | ######## | 0 | 0 |
| 30 | 235.4 | 201.8 | 302.7 | 67.3 | 874.3 | 369.9 | 369.9 | 0.0 | 134.5 | 571.7 | 0.0 | 33.6 | 0.0 | 33.6 | 33.6 | 3228.3 | 67.3 | 706.2 | 470.8 | 0.0 | ######## | 0 | 0 |
| 30B | 455.8 | 516.5 | 91.2 | 151.9 | 1336.9 | 395.0 | 729.2 | 0.0 | 303.9 | 911.6 | 0.0 | 30.4 | 0.0 | 0.0 | 30.4 | 4952.8 | 698.9 | 1185.0 | 364.6 | 0.0 | ######## | 0 | 0 |
| 31 | 248.8 | 186.6 | 0.0 | 186.6 | 342.1 | 311.0 | 186.6 | 0.0 | 124.4 | 342.1 | 31.1 | 0.0 | 31.1 | 0.0 | 31.1 | 2021.5 | 466.5 | 1275.1 | 995.2 | 0.0 | ######## | 0 | 0 |
| 32 | 115.9 | 86.9 | 29.0 | 86.9 | 144.8 | 144.8 | 289.7 | 0.0 | 115.9 | 144.8 | 57.9 | 0.0 | 0.0 | 0.0 | 0.0 | 1216.6 | 1419.4 | 347.6 | 1158.7 | 0.0 | ######## | 0 | 0 |

# Research for the management of the Fisheries on lake Tanganyika

**Gulf samples, 250 µm net**

**Survey number** 9505

**Analyzed by:** Muhoza

**NUMBER PER METER3**

Shrimp species: *P. moorei* *A. brevirostris* *L. parvula* *L. latipes*
*C. cunningtoni* *A. longirostris* *L. retiarius* *L. socius*
*C. paski* *L. tanganyikae* *L. spinipes*
*C. minuta* *L. similis*

| Sample number | Date | Fish larvae | | | | | | Fish Eggs | | Shrimps | | | | Unidentified | | Jelly-Fish | Other | Remarks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Centropomids | | | | Clupeids | | | | | | | | | | | | | |
| (G.....) | (dd/mm/yy) | *L. stappersi* | *L. mariae* | *L. angustifrons* | *L. microlepis* | *Stolothrissa* | *Limnothrissa* | centropomids | clupeids | *P. moorei* | *L. parvula* | *L.latipes* | *0* | larvae (short l.) | larvae (long l.) | *L. tanganyicae* | | | |
| 1 | 17 11 95 | 0.008 | 0 | 0.024 | 0.016 | 0.12 | 0.418 | 0 | 0 | 0 | 0 | 0.032 | 0 | 0.145 | 0.032 | 6.555 | 0 | | |
| 2 | 17 11 95 | 0.047 | 0.012 | 0.106 | 0.029 | 0.617 | 1.316 | 0 | 0 | 0.065 | 0 | 0.006 | 0 | 0.071 | 0.024 | 4.613 | 0 | | |
| 3 | 18 11 95 | 0.083 | 0.053 | 0.015 | 0.099 | 0.903 | 0.979 | 0 | 0.03 | 0.061 | 0 | 0 | 0 | 0.486 | 0 | 3.476 | 0 | | |
| 4 | 18 11 95 | 0.227 | 0.118 | 0.03 | 0.207 | 0.898 | 2.89 | 0 | 0 | 0.03 | 0 | 0.03 | 0 | 0.552 | 0.158 | 5.603 | 0 | | |
| E1 | 19 11 95 | 0.218 | 0.056 | 0.012 | 0.006 | 1.5 | 1.413 | 0.174 | 0.006 | 0.025 | 0.112 | 0 | 0 | 0.498 | 0.162 | 2.607 | 0 | | |
| 5 | 19 11 95 | 0 | 0.007 | 0.035 | 0.014 | 0.188 | 0.063 | 0 | 0 | 0.028 | 0.028 | 0 | 0 | 0.977 | 0 | 3.704 | 0 | | |
| 6 | 19 11 95 | 0.013 | 0.025 | 0.113 | 0.019 | 2.376 | 0.559 | 0 | 0 | 0.082 | 0 | 0 | 0 | 0.201 | 0 | 2.677 | 0 | | |
| 7 | 21 11 95 | 0.088 | 0.006 | 0.063 | 0.05 | 0.132 | 0.971 | 0 | 0 | 0.031 | 0.1 | 0 | 0 | 0.376 | 0.175 | 6.929 | 0 | | |
| 8 | 21 11 95 | 0.041 | 0.007 | 0.021 | 0.007 | 1.1 | 0.213 | 0 | 0 | 0.117 | 0 | 0.007 | 0 | 0.33 | 0.055 | 6.296 | 0 | | |
| 9 | 22 11 95 | 0.032 | 0.013 | 0 | 0.006 | 0.456 | 0.276 | 0 | 0 | 0 | 0.141 | 0 | 0 | 0.096 | 0.263 | 7.278 | 0 | | |
| 10 | 22 11 95 | 0 | 0 | 0.007 | 0 | 0.094 | 0.109 | 0 | 0 | 0.007 | 0.116 | 0 | 0 | 31.76 | 0.174 | 15.92 | 0 | | |
| 11 | 23 11 95 | 0.02 | 0 | 0 | 0.007 | 0.105 | 0.314 | 0 | 0 | 0.105 | 0.838 | 0 | 0 | 5.867 | 0.052 | 7.065 | 0 | | |
| 12 | 23 11 95 | 0.117 | 0.044 | 0.015 | 0.029 | 0.3 | 0.271 | 0.044 | 0 | 0.015 | 0.366 | 0 | 0 | 0.826 | 0.271 | 5.323 | 0 | | |
| 13 | 23 11 95 | 0.03 | 0 | 0.045 | 0.059 | 0.267 | 0.282 | 0 | 0 | 0.067 | 1.068 | 0 | 0 | 4.333 | 0 | 6.767 | 0 | | |
| 14 | 24 11 95 | 0.072 | 0.036 | 0.036 | 0.014 | 0.122 | 0.576 | 0.036 | 0 | 0.05 | 0.403 | 0 | 0 | 15.73 | 0.23 | 8.989 | 0 | | |
| 15 | 25 11 95 | 0.007 | 0.047 | 0.013 | 0.013 | 0.02 | 0.148 | 0 | 0.007 | 0.161 | 0.107 | 0 | 0 | 14.23 | 0.483 | 6.767 | ##### | | |
| 16 | 25 11 95 | 0.031 | 0.019 | 0 | 0.012 | 0.149 | 0.087 | 0 | 0 | 0 | 0.625 | 0 | 0 | 5.942 | 0.39 | 9.038 | 0 | | |
| E2 | 25 11 95 | 0.021 | 0.021 | 0.011 | 0.021 | 0.037 | 0.144 | 0.005 | 0 | 0.144 | 0.32 | 0 | 0 | 5.059 | 0.192 | 6.532 | 0 | | |
| 17 | 26 11 95 | 0.089 | 0.005 | 0.005 | 0 | 0.111 | 0.168 | 0 | 0 | 0.047 | 0.716 | 0 | 0 | 2.485 | 0.295 | 11.45 | 0 | | |
| 19 | 27 11 95 | 0.024 | 0.016 | 0.008 | 0 | 0.049 | 0.098 | 0 | 0 | 0.073 | 0.391 | 0 | 0 | 3.066 | 0.13 | 21.56 | 0 | | |
| 20 | 27 11 95 | 0.007 | 0.007 | 0.007 | 0 | 0.064 | 0.057 | 0 | 0 | 0.064 | 0.228 | 0 | 0 | 4.908 | 0.457 | 14.35 | 0 | | |
| 21 | 29 11 95 | 0 | 0 | 0.007 | 0.084 | 0.007 | 0.007 | 0 | 0 | 0.035 | 0.112 | 0 | 0 | 3.462 | 0 | 8.872 | 0 | | |
| 22 | 29 11 95 | 0.017 | 0.05 | 0 | 0 | 0.128 | 0.045 | 0 | 0 | 0.039 | 0.045 | 0 | 0 | 4.763 | 0.089 | 11.77 | 0 | | |
| 23 | 30 11 95 | 0.006 | 0.057 | 0.017 | 0.017 | 0.011 | 0.023 | 0 | 0 | 0.029 | 1.181 | 0.092 | 0 | 713.3 | 11.74 | 5.727 | 0 | | |
| 25 | 01 12 95 | 0 | 0 | 0 | 0.009 | 0.027 | 0 | 0 | 0.062 | 0 | 0 | 0 | 0 | 3.62 | 0.142 | 7.196 | 0 | | |
| 26 | 01 12 95 | 0.051 | 0.034 | 0.017 | 0 | 0.185 | 1.246 | 0.011 | 0 | 0.017 | 0.045 | 0 | 0 | 3.884 | 0.247 | 5.309 | 0 | | |
| 27 | 03 12 95 | 0.013 | 0.013 | 0.047 | 0.013 | 0.067 | 0.027 | 0 | 0.248 | 0 | 0.013 | 0 | 0 | 0.114 | 0.074 | 3.448 | 0 | | |
| 28 | 03 11 95 | 0.057 | 0.011 | 0 | 0.011 | 0.045 | 0.232 | 0.085 | 0 | 0 | 0 | 0 | 0 | 0.271 | 0.181 | 4.302 | 0 | | |

**Research for the management of the Fisheries on lake Tanganyika**

**R/V Explorer samples - Gulf net**

**100µm Gulf net**

**All bottles were subsampled; 1 or 2 ml per bottle was counted**

**#Value!: more than 200 specimens/too many to count**

**CRUISE: 9505**

**DEPTH: 0-300 m (at 50m intervals)**

**Counting team:KAOMA/ZULU**

| | Diaptomidae | | | | | Cyclopidae, big | | | | | Cyclopidae, small | | | | | Total | Jelly | Shrimp | Free | Fish | Vor | Oth | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gulf station | M | F | Ov | Co | Na | M | F | Ov | Co | Na | M | F | Ov | Co | Na | Copepoda | fish | | Eggs | Larvae | | | |
| 1E | 578.1 | 433.6 | 4625.1 | 1011.7 | 2457.1 | 1156.3 | 722.7 | 289.1 | 289.1 | 1589.9 | 0.0 | 0.0 | 0.0 | 0.0 | 144.5 | 13297.1 | 578.1 | 0.0 | 12574.4 | 722.7 | ######## | 0 | E=extra gulf haul |
| 2 | 148.7 | 49.6 | 3271.6 | 247.9 | 1338.4 | 297.4 | 297.4 | 396.6 | 297.4 | 1041.0 | 99.1 | 49.6 | 0.0 | 0.0 | 49.6 | 7584.2 | 941.8 | 99.1 | 2676.8 | 0.0 | 0 | 0 | 0 |
| 2* | 602.5 | 1707.2 | 2309.7 | 2108.8 | 1908.0 | 401.7 | 301.3 | 0.0 | 1707.2 | 6426.9 | 0.0 | 0.0 | 0.0 | 100.4 | 502.1 | 18075.7 | 3113.0 | 0.0 | 4117.2 | 301.3 | 0 | 0 | *=extra volume of |
| 2E | 1112.0 | 2446.4 | 13344.2 | 1779.2 | 1334.4 | 2446.4 | 2891.3 | 667.2 | 2446.4 | 22240.4 | 222.4 | 0.0 | 0.0 | 222.4 | 1779.2 | 52932.1 | 4892.9 | 1112.0 | 20238.8 | 0.0 | 0 | 0 | E=extra gulf haul |
| 3 | 476.4 | 1810.3 | 3620.7 | 1524.5 | 95.3 | 1619.8 | 1619.8 | 0.0 | 1524.5 | 11529.0 | 95.3 | 0.0 | 0.0 | 190.6 | 571.7 | 24677.9 | 1905.6 | 0.0 | 5240.5 | 95.3 | 0 | 0 | 0 |
| 4 | 580.7 | 2032.6 | 2903.7 | 1306.7 | 290.4 | 1161.5 | 1306.7 | 435.6 | 1306.7 | 14228.0 | 145.2 | 0.0 | 0.0 | 435.6 | 580.7 | 26713.7 | 1161.5 | 0.0 | 4936.2 | 580.7 | 0 | 0 | 0 |
| 5 | 762.3 | 762.3 | 2858.6 | 381.1 | 571.7 | 762.3 | 1524.6 | 762.3 | 571.7 | 30872.8 | 190.6 | 0.0 | 0.0 | 571.7 | 1143.4 | 41735.4 | 2858.6 | 381.1 | 17342.1 | 0.0 | 0 | 0 | 0 |
| 6 | 390.2 | 780.5 | 1561.0 | 1365.9 | 1170.7 | 1170.7 | 195.1 | 0.0 | 1951.2 | 24975.6 | 585.4 | 195.1 | 0.0 | 0.0 | 585.4 | 34926.9 | 3317.1 | 0.0 | 6048.8 | 585.4 | 0 | 0 | 0 |
| 7 | 431.5 | 1078.6 | 13051.4 | 0.0 | 215.7 | 323.6 | 862.9 | 0.0 | 107.9 | 15532.3 | 0.0 | 0.0 | 0.0 | 215.7 | 970.8 | 32790.4 | 539.3 | 0.0 | 6687.5 | 862.9 | ######## | 0 | 0 |
| 8 | 1407.8 | 541.4 | 1516.0 | 0.0 | 2382.4 | 866.3 | 1624.3 | 324.9 | 0.0 | 1299.5 | 108.3 | 108.3 | 0.0 | 0.0 | 216.6 | 10395.7 | 2815.5 | 108.3 | 13861.0 | 108.3 | 0 | 0 | 0 |
| 9 | 1385.1 | 377.8 | 1762.9 | 125.9 | 2140.6 | 881.4 | 1133.3 | 881.4 | 251.8 | 2266.6 | 125.9 | 0.0 | 0.0 | 0.0 | 125.9 | 11458.7 | 4910.9 | 0.0 | 11458.7 | 251.8 | 0 | 0 | 0 |
| 10 | 553.9 | 664.7 | 4874.5 | 110.8 | 2658.8 | 664.7 | 775.5 | 0.0 | 0.0 | 1440.2 | 221.6 | 0.0 | 0.0 | 0.0 | 0.0 | 11964.6 | 8198.0 | 4099.0 | 3877.4 | 0.0 | 0 | 0 | 0 |
| 11 | 708.1 | 141.6 | 3257.2 | 141.6 | 2407.5 | 849.7 | 424.9 | 0.0 | 708.1 | 1699.4 | 283.2 | 0.0 | 0.0 | 0.0 | 141.6 | 10763.1 | 4531.8 | 2974.0 | 5523.2 | 283.2 | 0 | 0 | 0 |
| 12 | 345.0 | 862.6 | 3450.4 | 172.5 | 1380.2 | 1035.1 | 2242.8 | 0.0 | 2415.3 | 8453.5 | 172.5 | 172.5 | 0.0 | 0.0 | 345.0 | 21047.4 | 8798.5 | 862.6 | 9316.1 | 0.0 | 0 | 0 | 0 |
| 13 | 683.9 | 683.9 | 1367.7 | 1538.7 | 3590.3 | 1196.8 | 1367.7 | 0.0 | 1709.6 | 12309.5 | 0.0 | 171.0 | 0.0 | 0.0 | 171.0 | 24789.9 | 3590.3 | 0.0 | 13848.2 | 171.0 | 0 | 0 | 0 |
| 14 | 499.7 | 1665.7 | 12825.7 | 999.4 | 499.7 | 166.6 | 0.0 | 1665.7 | 832.8 | 16823.3 | 166.6 | 166.6 | 0.0 | 499.7 | 1665.7 | 38477.1 | 3331.4 | 3497.9 | 18155.9 | 0.0 | 0 | 0 | 0 |
| 15 | 599.7 | 1049.5 | 10945.3 | 0.0 | 0.0 | 449.8 | 0.0 | 749.7 | 1049.5 | 17992.3 | 149.9 | 149.9 | 0.0 | 149.9 | 1049.5 | 34335.2 | 2998.7 | 3298.6 | 14393.8 | 149.9 | 0 | 0 | 0 |
| 16 | 721.9 | 1299.4 | 10395.3 | 1010.7 | 721.9 | 433.1 | 0.0 | 721.9 | 577.5 | 13571.7 | 144.4 | 577.5 | 144.4 | 433.1 | 577.5 | 31330.4 | 3609.5 | 5630.8 | 15448.6 | 0.0 | 0 | 0 | 0 |
| 17 | 729.3 | 1701.6 | 8872.7 | 0.0 | 2309.3 | 729.3 | 364.6 | 121.5 | 243.1 | 6320.3 | 243.1 | 121.5 | 0.0 | 0.0 | 243.1 | 21999.3 | 5226.4 | 1093.9 | 11546.6 | 243.1 | 0 | 0 | 0 |
| 19 | 358.2 | 2149.3 | 15761.8 | 0.0 | 3761.3 | 716.4 | 1432.9 | 0.0 | 0.0 | 2328.4 | 179.1 | 0.0 | 0.0 | 0.0 | 179.1 | 26866.7 | 5015.1 | 537.3 | 13612.5 | 0.0 | 0 | 0 | 0 |
| 20 | 1732.6 | 1540.1 | 5775.2 | 192.5 | 1347.6 | 1732.6 | 2695.1 | 0.0 | 1347.6 | 5582.7 | 192.5 | 192.5 | 0.0 | 192.5 | 192.5 | 22715.9 | 3272.6 | 385.0 | 17903.2 | 0.0 | 0 | 0 | 0 |
| 21 | 382.6 | 0.0 | 8416.9 | 127.5 | 1912.9 | 255.1 | 892.7 | 382.6 | 637.6 | 1020.2 | 255.1 | 127.5 | 0.0 | 0.0 | 255.1 | 14665.9 | 5356.2 | 765.2 | 19894.6 | 0.0 | 0 | 0 | 0 |
| 22 | 450.3 | 675.5 | 8781.4 | 225.2 | 2814.5 | 450.3 | 1125.8 | 0.0 | 450.3 | 1688.7 | 225.2 | 337.7 | 0.0 | 112.6 | 337.7 | 17675.3 | 6304.6 | 2364.2 | 19026.3 | 225.2 | 0 | 0 | 0 |
| 23 | 745.7 | 639.2 | 4687.4 | 213.1 | 2876.4 | 745.7 | 1065.3 | 0.0 | 532.7 | 1065.3 | 213.1 | 106.5 | 0.0 | 0.0 | 106.5 | 12996.9 | 1491.4 | ######## | 6072.3 | 106.5 | 0 | 0 | 0 |
| 25 | 1269.7 | 725.6 | 544.2 | 544.2 | 5623.2 | 725.6 | 2720.9 | 181.4 | 1632.5 | 3809.2 | 362.8 | 181.4 | 0.0 | 181.4 | 181.4 | 18683.4 | 7255.7 | 3990.6 | 1813.9 | 181.4 | 0 | 0 | 0 |
| 26 | 483.3 | 1087.5 | 3262.4 | 845.8 | 2537.4 | 120.8 | 845.8 | 120.8 | 362.5 | 1691.6 | 120.8 | 241.7 | 0.0 | 120.8 | 120.8 | 11962.1 | 2295.8 | 1450.0 | 2779.1 | 483.3 | 0 | 0 | 0 |
| 27 | 318.5 | 849.2 | 2229.2 | 424.6 | 1698.4 | 955.4 | 636.9 | 0.0 | 212.3 | 1167.7 | 106.2 | 106.2 | 0.0 | 0.0 | 106.2 | 8810.5 | 3396.8 | 0.0 | 849.2 | 106.2 | 0 | 0 | 0 |
| 28 | 1459.2 | 1783.5 | 4215.5 | 810.7 | 2269.9 | 1459.2 | 648.5 | 0.0 | 162.1 | 3404.9 | 0.0 | 162.1 | 0.0 | 324.3 | 486.4 | 17186.4 | 3891.3 | 324.3 | 5836.9 | 486.4 | 0 | 0 | 0 |

# Research for the management of the Fisheries on lake Tanganyika

**Gulf samples, 250 µm net**

**Survey number** 96/07

**Analyzed by:** Muhoza ,Bosma

**NUMBER PER METER3**

Shrimp species: *P. moorei* *A. brevirostris* *L. parvula* *L. latipes*
*C. cunningtoni* *A. longirostris* *L. retiarius* *L. socius*
*C. paski* *L. tanganyikae* *L. spinipes*
*C. minuta* *L. similis*

| Sample number | Date | Fish larvae | | | | | | Fish Eggs | | Shrimps | | | | Unidentified | | Jelly-Fish | Other | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Centropomids | | | | Clupeids | | | | | | | | | | | | |
| (G.....) | (dd/mm/yy) | *L. stappersi* | *L. mariae* | *L. angustifrons* | *L. microlepis* | *Stolothrissa* | *Limnothrissa* | centropomids | clupeids | *P. moorei* | *L. parvula* | *L.Latipes* | *0* | larvae (short l.) | larvae (long l.) | *L. tanganyicae* | | |
| 1 | 03 34 96 | 0 | 0.006 | 0.006 | 0.044 | 0.572 | 0.143 | 0 | 0.099 | 0.124 | 0.647 | 0 | 0 | 0.473 | 0.149 | 3.053 | 0 | |
| 2 | 03 04 96 | 0 | 0 | 0 | 0 | 0.014 | 0.05 | 0 | 0 | 0.007 | 0.007 | 0 | 0 | 0.029 | 0.043 | 4.933 | 0.007 | unknown shrimp lar |
| 3 | 04 04 96 | 0.008 | 0.008 | 0.008 | 0.008 | 0.075 | 0.075 | 0 | 0 | 0.033 | 0 | 0 | 0 | 0.215 | 0.017 | 4.504 | 0 | |
| 4 | 04 04 96 | 0 | 0 | 0 | 0.008 | 0.008 | 0.203 | 0 | 0 | 0 | 0.008 | 0 | 0 | 0.235 | 0.008 | 3.869 | 0 | |
| 5 | 05 04 96 | 0.006 | 0 | 0 | 0 | 0.209 | 0.035 | 0 | 0 | 0 | 0 | 0 | 0 | 0.227 | 0.029 | 3.423 | 0 | |
| 6 | 05 04 96 | 0 | 0 | 0 | 0 | 0.007 | 0.113 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.007 | 10.13 | 0 | |
| 7 | 07 04 96 | 0.049 | 0.084 | 0.042 | 0.063 | 1.28 | 0.431 | 0 | 0 | 0.028 | 0 | 0 | 0 | 12.53 | 0 | 2.199 | 0 | |
| 8 | 07 04 96 | 0.027 | 0.014 | 0 | 0.007 | 0.096 | 0.164 | 0 | 0 | 0.048 | 0 | 0 | 0 | 0.356 | 0.246 | 2.908 | 0 | |
| 9 | 07 04 96 | 0.006 | 0 | 0 | 0.006 | 0.378 | 0.23 | 0 | 0 | 0.019 | 0.026 | 0 | 0 | 2.304 | 0.006 | 1.735 | 0 | |
| 10 | 08 04 96 | 0.032 | 0.097 | 0.071 | 0.064 | 0.154 | 0.277 | 0.026 | 0 | 0.006 | 0.013 | 0.013 | 0 | 8.545 | 0.006 | 7.103 | 0 | |
| 11 | 08 04 96 | 0.019 | 0.019 | 0.013 | 0 | 0.057 | 0.1 | 0 | 0 | 0.025 | 0.019 | 0 | 0 | 0.559 | 0 | 5.301 | 0 | |
| 12 | 08 04 96 | 0 | 0.022 | 0.015 | 0.045 | 0.564 | 0.282 | 0 | 0.007 | 0.022 | 0 | 0 | 0 | 50.14 | 0 | 5.458 | 0 | |
| 13 | 09 04 96 | 0.074 | 0.04 | 0.007 | 0 | 0.054 | 0.161 | 0.013 | 0 | 0.02 | 0.034 | 0 | 0 | 2.333 | 0.013 | 4.794 | 0 | |
| 14 | 09 04 96 | 0.095 | 0.102 | 0 | 0.019 | 0.827 | 0.248 | 0 | 0.35 | 0.025 | 1.12 | 0 | 0 | 10.99 | 0.305 | 4.975 | 0 | |

**Research for the management of the Fisheries on lake Tanganyika**

**R/V Explorer samples - Gulf net**

**100µm Gulf net**

**All bottles were subsampled; 1 or 2 ml per bottle was counted**

**#Value!: more than 200 specimens/too many to count**

**CRUISE: 9607**

**DEPTH: 0-300 m (at 50m intervals)**

**Counting team:KAOMA/ZULU**

| | Diaptomidae | | | | | Cyclopidae, big | | | | | Cyclopidae, small | | | | | Total | Jelly | Shrimp | Free | Fish | Vor | Oth | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gulf station | M | F | Ov | Co | Na | M | F | Ov | Co | Na | M | F | Ov | Co | Na | Copepoda | fish | | Eggs | Larvae | | | |
| 1 | 318.2 | 477.3 | 397.8 | 477.3 | 477.3 | 477.3 | 159.1 | 0.0 | 1670.6 | 4295.9 | 79.6 | 0.0 | 0.0 | 0.0 | 159.1 | 8989.5 | 954.6 | 795.5 | 6284.7 | 0.0 | 0 | 0 | 0 |
| 2 | 189.8 | 126.5 | 0.0 | 253.1 | 316.4 | 126.5 | 126.5 | 0.0 | 632.7 | 5314.9 | 0.0 | 0.0 | 0.0 | 126.5 | 632.7 | 7845.8 | 442.9 | 126.5 | 63.3 | 0.0 | 0 | 0 | 0 |
| 3 | 83.7 | 502.0 | 920.3 | 502.0 | 418.3 | 251.0 | 0.0 | 167.3 | 418.3 | 1840.6 | 0.0 | 0.0 | 0.0 | 83.7 | 83.7 | 5270.9 | 920.3 | 83.7 | 9119.4 | 167.3 | 0 | 0 | 0 |
| 4 | 93.7 | 374.8 | 93.7 | 93.7 | 2717.1 | 562.2 | 655.8 | 0.0 | 93.7 | 2248.6 | 0.0 | 0.0 | 0.0 | 0.0 | 93.7 | 7026.9 | 1780.1 | 93.7 | 374.8 | 187.4 | 0 | 0 | 0 |
| 5 | 203.6 | 407.2 | 67.9 | 271.5 | 1018.0 | 203.6 | 1085.9 | 0.0 | 610.8 | 678.7 | 67.9 | 0.0 | 0.0 | 0.0 | 0.0 | 4615.0 | 1153.8 | 271.5 | 882.3 | 67.9 | 0 | 0 | 0 |
| 6 | 185.6 | 464.1 | 0.0 | 92.8 | 3062.8 | 278.4 | 649.7 | 0.0 | 185.6 | 1763.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6682.5 | 2505.9 | 278.4 | 0.0 | 0.0 | 0 | 0 | 0 |
| 7 | 393.1 | 1375.8 | 0.0 | 98.3 | 1081.0 | 393.1 | 294.8 | 98.3 | 2948.1 | 3930.7 | 98.3 | 98.3 | 0.0 | 196.5 | 294.8 | 11300.9 | 2063.6 | 1572.3 | 7370.1 | 294.8 | 0 | 0 | 0 |
| 8 | 77.4 | 154.8 | 773.8 | 309.5 | 232.2 | 773.8 | 619.1 | 77.4 | 232.2 | 7428.9 | 77.4 | 0.0 | 0.0 | 232.2 | 154.8 | 11143.3 | 1779.8 | 77.4 | 0.0 | 0.0 | 0 | 0 | 0 |
| 9 | 358.0 | 429.6 | 143.2 | 143.2 | 214.8 | 0.0 | 71.6 | 0.0 | 0.0 | 716.1 | 0.0 | 0.0 | 0.0 | 0.0 | 71.6 | 2148.2 | 1074.1 | 572.9 | 4296.5 | 71.6 | 0 | 0 | 0 |
| 10 | 249.7 | 333.0 | 0.0 | 0.0 | 416.2 | 582.7 | 0.0 | 0.0 | 166.5 | 2414.0 | 0.0 | 0.0 | 0.0 | 166.5 | 83.2 | 4411.8 | 1581.6 | 0.0 | 7408.5 | 166.5 | 0 | 0 | 0 |
| 11 | 164.9 | 247.4 | 577.2 | 412.3 | 1649.0 | 329.8 | 1154.3 | 82.5 | 329.8 | 2638.5 | 82.5 | 0.0 | 0.0 | 164.9 | 329.8 | 8162.8 | 1731.5 | 247.4 | 6431.3 | 247.4 | 0 | 0 | 0 |
| 12 | 273.4 | 182.3 | 0.0 | 273.4 | 1640.5 | 273.4 | 364.6 | 91.1 | 364.6 | 820.3 | 91.1 | 0.0 | 0.0 | 0.0 | 91.1 | 4465.8 | 2369.6 | 364.6 | 638.0 | 91.1 | 0 | 0 | 0 |
| 13 | 1796.8 | 1886.7 | 1347.6 | 898.4 | 89.8 | 89.8 | 1078.1 | 0.0 | 808.6 | 9253.6 | 89.8 | 0.0 | 0.0 | 179.7 | 359.4 | 17878.3 | 3054.6 | 359.4 | 3413.9 | 89.8 | 0 | 0 | 0 |
| 14 | 836.7 | 1859.4 | 1766.4 | 743.8 | 93.0 | 0.0 | 557.8 | 93.0 | 371.9 | 6600.9 | 93.0 | 0.0 | 0.0 | 0.0 | 371.9 | 13387.8 | 2045.4 | 1394.6 | 6786.9 | 185.9 | 0 | 0 | 0 |

# Research for the management of the Fisheries on lake Tanganyika

**Gulf samples, 250 µm net**

**Survey number** 97/17

**Analyzed by:** Muhoza

**NUMBER PER METER3**

Shrimp species: *P. moorei* *A. brevirostris* *L. parvula* *L. latipes*
*C. cunningtoni* *A. longirostris* *L. retiarius* *L. socius*
*C. paski* *L. tanganyikae* *L. spinipes*
*C. minuta* *L. similis*

| Sample number | Date | Fish larvae | | | | | | Fish Eggs | | Shrimps | | | | | | Jelly-Fish | Other | Remarks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Centropomids | | | | Clupeids | | | | | | | | Unidentified | | | | | |
| (G.....) | (dd/mm/yy) | *L. stappersi* | *L. mariae* | *L. angustifrons* | *L. microlepis* | *Stolothrissa* | *Limnothrissa* | centropomids | clupeids | *P. moorei* | *L. parvula* | *0* | *0* | larvae (short l.) | larvae (long l.) | *L. tanganyicae* | | | |
| G1 | 23 11 97 | 0.058 | 0.012 | 0 | 0.023 | 0.444 | 0.374 | 0 | 0 | 0.105 | 0.28 | 0 | 0 | 0.49 | 0 | 1.775 | 0 | | |
| G2 | 24 11 97 | 0.082 | 0.023 | 0.012 | 0.076 | 0.233 | 0.012 | 0.006 | 0 | 0.006 | 0.023 | 0 | 0 | 0.018 | 0 | 2.019 | 0 | | |
| G3 | 25 11 97 | 0.012 | 0 | 0 | 0.012 | 0.276 | 0.311 | 0 | 0 | 0.035 | 0.069 | 0 | 0 | 1.888 | 0 | 1.68 | 0 | | |
| G4 | 26 11 97 | 0.022 | 0.022 | 0 | 0.087 | 0.826 | 0.109 | 0 | 0.152 | 0.043 | 0 | 0 | 0 | 1.044 | 0 | 1.218 | 0 | | |
| G5 | 27 11 97 | 0.024 | 0.024 | 0 | 0 | 0.7 | 0.097 | 0 | 0 | 0.024 | 8.017 | 0 | 0 | 9.176 | 0 | 1.642 | 0 | | |
| G6 | 28 11 97 | 0.091 | 0 | 0 | 0.181 | 0.634 | 0 | 0 | 0.815 | 0.181 | 30.43 | 0 | 0 | 384 | 0 | 2.038 | 0 | | |
| G7 | 29 11 97 | 0.074 | 0.012 | 0 | 0.025 | 0 | 0 | 0.012 | 0 | 0 | 2.148 | 0 | 0 | 0.074 | 0 | 4.481 | 0 | | |
| G8 | 02 12 97 | 0.097 | 0 | 0 | 0 | 0.097 | 0.048 | 0 | 0 | 0.048 | 30.92 | 0 | 0 | 4.639 | 0 | 8.794 | 0 | | |
| G9 | 02 12 97 | 0.18 | 0 | 0 | 0 | 0 | 0.27 | 0.18 | 0.135 | 0.09 | 112.1 | 0 | 0 | 175.4 | 0 | 9.209 | 0 | | |
| G10 | 04 12 97 | 0.209 | 0 | 0 | 0.021 | 0.083 | 0.146 | 0 | 0 | 0.042 | 34.45 | 0 | 0 | 1.668 | 0 | 1.627 | 0 | | |
| G11 | 05 12 97 | 0.464 | 0 | 0 | 0.058 | 0.174 | 1.219 | 0.116 | 0 | 0 | 56.65 | 0 | 0 | 192.2 | 0 | 7.081 | 0 | | |
| G12 | 06 12 97 | 0.293 | 0 | 0 | 0.049 | 0.244 | 0.39 | 0 | 0 | 0.049 | 7.808 | 0 | 0 | 170.2 | 0 | 8.394 | 0 | | |
| G13 | 07 12 97 | 0.026 | 0.006 | 0 | 0.071 | 0.175 | 0.11 | 0.013 | 0 | 0.091 | 0.305 | 0 | 0 | 0.214 | 0 | 3.191 | 0 | | |
| G14 | 07 12 97 | 0.046 | 0 | 0 | 0 | 0.851 | 0.368 | 0 | 0 | 0.092 | 1.104 | 0 | 0 | 20.42 | 0 | 3.427 | 0 | | |
| G15 | 08 12 97 | 0 | 0 | 0 | 0 | 0.2 | 0.1 | 0 | 0 | 0 | 0.022 | 0 | 0 | 10.78 | 0 | 1.541 | 0 | | |

**Research for the management of the Fisheries on lake Tanganyika**

**R/V Explorer samples - Gulf net**

**100µm Gulf net**

**All bottles were subsampled; 1 or 2 ml per bottle was counted**

**#Value!: more than 200 specimens/too many to count**

**CRUISE: 9717**

**DEPTH: 0-300 m (at 50m intervals)**

**Counting team:ZULU**

| | Diaptomidae | | | | | Cyclopidae, big | | | | | Cyclopidae, small | | | | | Total | Jelly | Shrimp | Free | Fish | Vor | Oth | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gulf station | M | F | Ov | Co | Na | M | F | Ov | Co | Na | M | F | Ov | Co | Na | Copepoda | fish | | Eggs | Larvae | | | |
| 1 | 541.6 | 677.1 | 2098.9 | 609.4 | 947.9 | 1083.3 | 1151.0 | 203.1 | 338.5 | 12322.5 | 67.7 | 0.0 | 0.0 | 203.1 | 338.5 | 20582.7 | 880.2 | 67.7 | 7921.6 | 203.1 | 0 | 0 | 0 |
| 2 | 445.4 | 381.8 | 254.5 | 1018.1 | 1081.7 | 2099.8 | 1845.3 | 63.6 | 1399.9 | 10053.6 | 63.6 | 0.0 | 0.0 | 190.9 | 445.4 | 19343.6 | 1399.9 | 0.0 | 1018.1 | 254.5 | 0 | 0 | 0 |
| 3 | 112.1 | 392.2 | 672.3 | 0.0 | 168.1 | 280.1 | 784.4 | 224.1 | 504.3 | 2017.0 | 56.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5210.6 | 1344.7 | 112.1 | 4146.1 | 112.1 | 0 | 0 | 0 |
| 4 | 63.2 | 315.8 | 378.9 | 442.1 | 63.2 | 442.1 | 821.0 | 0.0 | 63.2 | 2210.3 | 126.3 | 0.0 | 0.0 | 0.0 | 63.2 | 4988.9 | 1894.5 | 0.0 | 315.8 | 505.2 | 0 | 0 | 0 |
| 5 | 0.0 | 291.1 | 1382.5 | 145.5 | 72.8 | 145.5 | 145.5 | 145.5 | 218.3 | 2110.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4656.9 | 1819.1 | 509.4 | 2546.8 | 291.1 | 0 | 0 | 1 Shrimp with |
| 6 | 375.6 | 450.7 | 2253.6 | 375.6 | 826.3 | 225.4 | 976.6 | 75.1 | 1051.7 | 5333.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 11944.3 | 2929.7 | 4432.1 | 9014.5 | 525.8 | 0 | 0 | 6 eggs |
| 7 | 69.8 | 488.5 | 697.9 | 209.4 | 1046.8 | 279.2 | 558.3 | 0.0 | 209.4 | 2233.2 | 69.8 | 0.0 | 0.0 | 139.6 | 0.0 | 6001.8 | 2093.7 | 488.5 | 348.9 | 0.0 | 0 | 0 | 0 |
| 8 | 257.2 | 343.0 | 600.2 | 0.0 | 2315.2 | 428.7 | 600.2 | 171.5 | 343.0 | 3772.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8832.0 | 428.7 | 857.5 | 771.7 | 0.0 | 0 | 0 | 0 |
| 9 | 416.9 | 917.2 | 1000.6 | 416.9 | 833.8 | 500.3 | 250.2 | 83.4 | 416.9 | 6420.6 | 166.8 | 0.0 | 0.0 | 0.0 | 250.2 | 11673.9 | 2334.8 | 1917.9 | 1000.6 | 0.0 | 0 | 0 | 0 |
| 10 | 0.0 | 321.7 | 836.5 | 0.0 | 579.1 | 257.4 | 128.7 | 64.3 | 643.5 | 5662.8 | 64.3 | 0.0 | 0.0 | 64.3 | 0.0 | 8622.9 | 2509.6 | 6113.2 | 128.7 | 0.0 | 128.7 | 0 | several shrimps |
| 11 | 99.3 | 794.2 | 1687.6 | 595.6 | 99.3 | 794.2 | 1290.5 | 0.0 | 2084.7 | 4765.0 | 198.5 | 0.0 | 0.0 | 0.0 | 99.3 | 12508.2 | 1290.5 | 3673.0 | 1290.5 | 0.0 | 0 | 0 | with eggs |
| 12 | 475.4 | 1018.8 | 950.9 | 271.7 | 2648.9 | 407.5 | 1018.8 | 203.8 | 1358.4 | 4075.2 | 135.8 | 0.0 | 0.0 | 67.9 | 271.7 | 12904.7 | 1494.2 | 3396.0 | 679.2 | 0.0 | 407.517 | 0 | 0 |
| 13 | 208.2 | 138.8 | 694.0 | 277.6 | 763.4 | 624.6 | 902.2 | 69.4 | 347.0 | 3747.8 | 0.0 | 0.0 | 0.0 | 0.0 | 69.4 | 7842.6 | 2359.7 | 1179.9 | 624.6 | 138.8 | 208.21 | 0 | 2 shrimps with |
| 14 | 868.3 | 1026.2 | 1578.8 | 78.9 | 1894.5 | 631.5 | 1420.9 | 315.8 | 315.8 | 6788.7 | 0.0 | 0.0 | 0.0 | 0.0 | 236.8 | 15156.2 | 2447.1 | 947.3 | 7578.1 | 473.6 | 157.877 | 0 | eggs |

# Research for the management of the Fisheries on lake Tanganyika

**Gulf samples, 250 mm net**

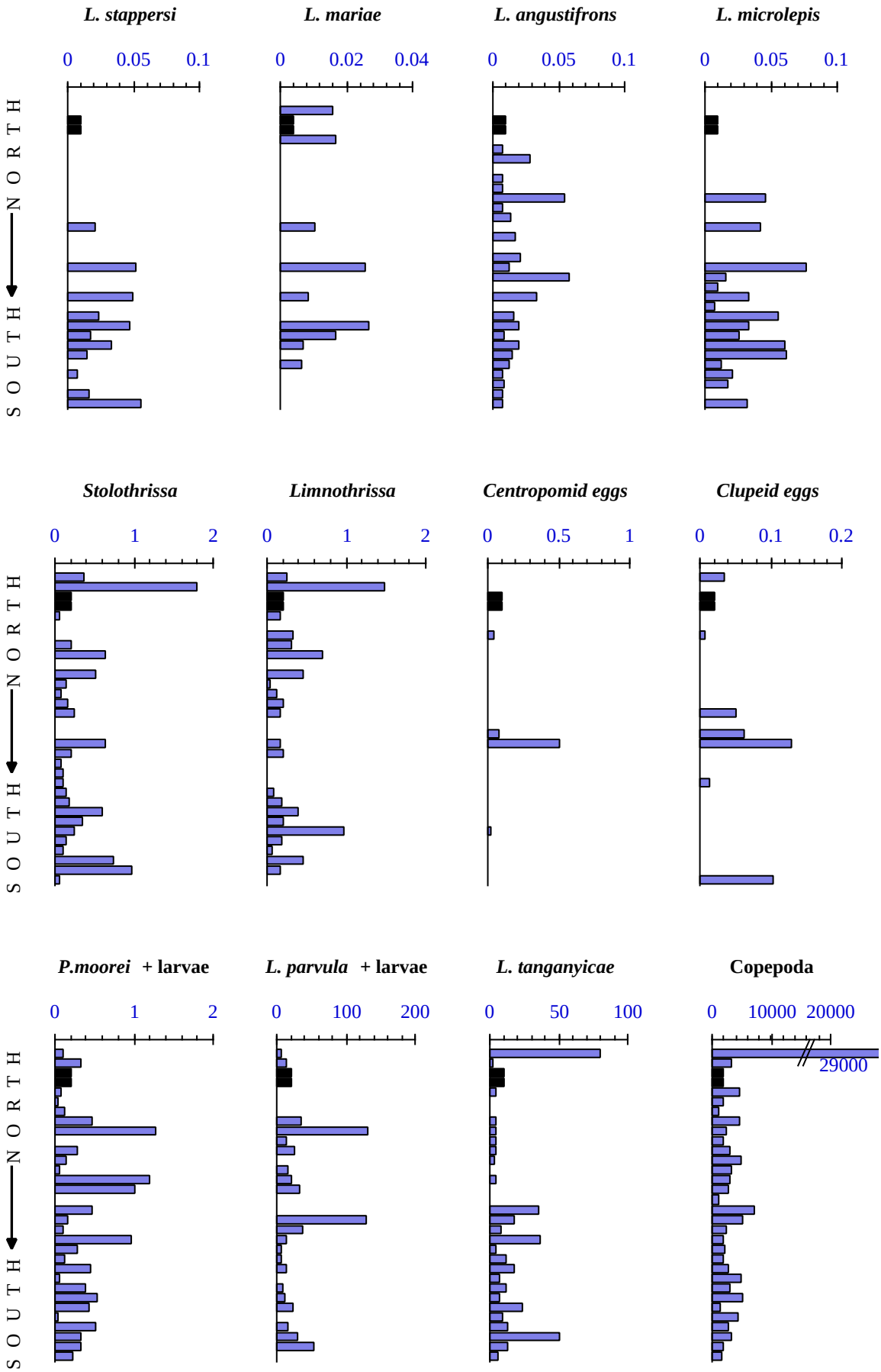
**Survey number** 9819

**Analyzed by:** Muhoza

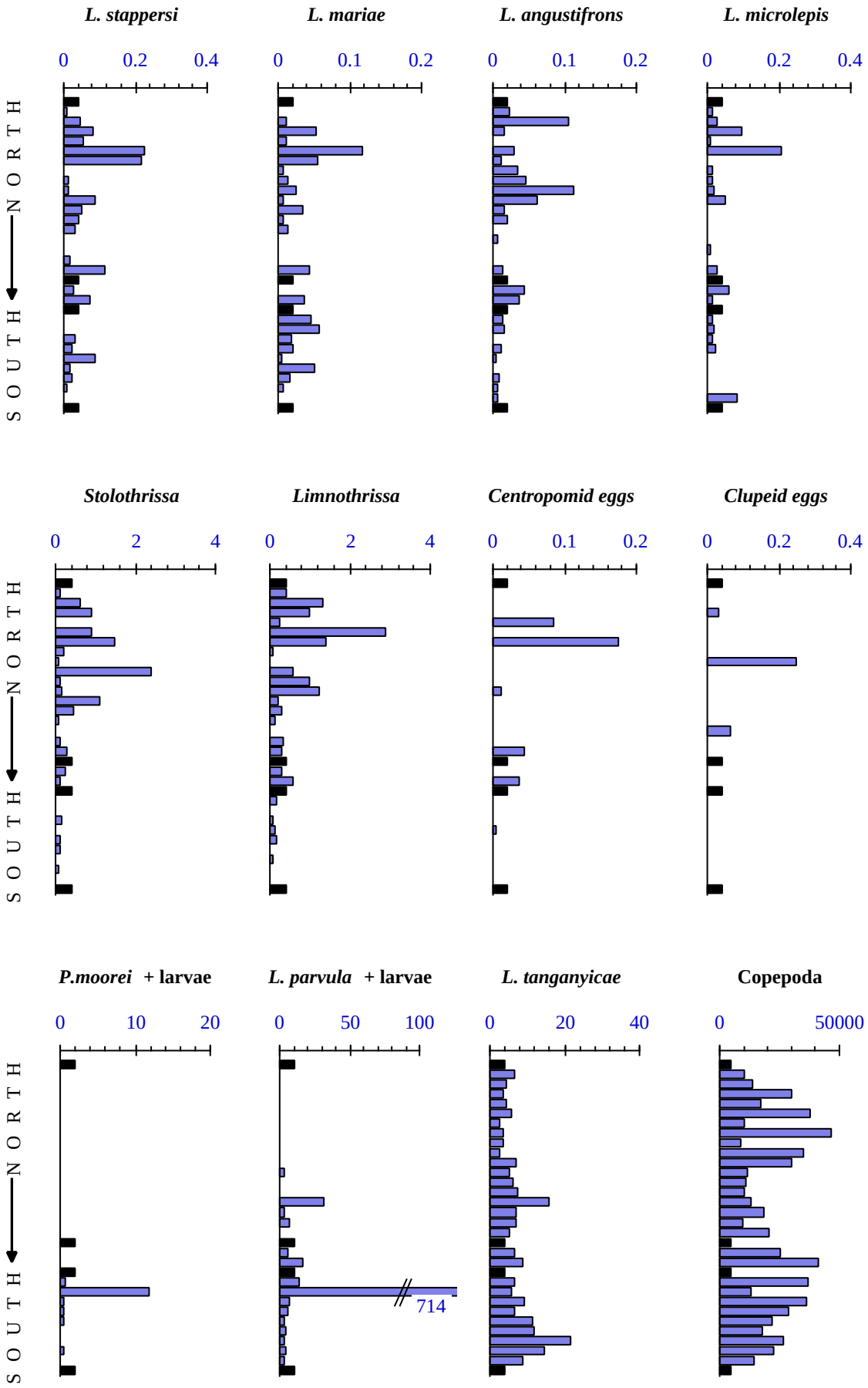
**NUMBER PER METER3**

Shrimp species: *P. moorei* *A. brevirostris* *L. parvula* *L. latipes*
*C. cunningtoni* *A. longirostris* *L. retiarius* *L. socius*
*C. paski* *L. tanganyikae* *L. spinipes*
*C. minuta* *L. similis*

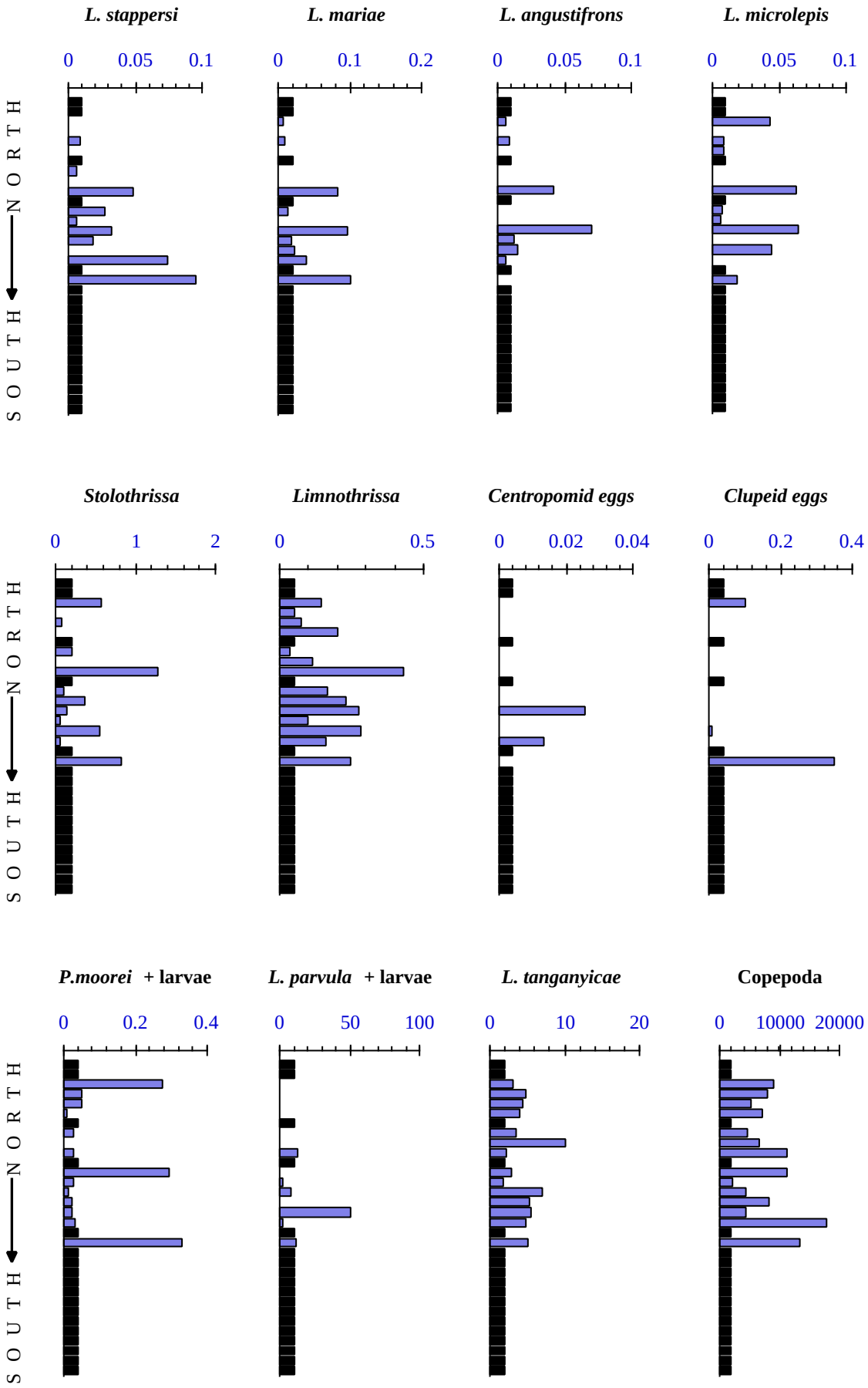
| Sample number | Date | Fish larvae | | | | | | Fish Eggs | | Shrimps | | | | | | Jelly-Fish | Other | Remarks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Centropomids | | | | Clupeids | | | | | | | | Unidentified | | | | | |
| (G.....) | (dd/mm/yy) | *L. stappersi* | *L. mariae* | *L. angustifrons* | *L. microlepis* | *Stolothrissa* | *Limnothrissa* | centropomids | clupeids | *P. moorei* | *L. parvula* | *0* | *0* | larvae (short l.) | larvae (long l.) | *L. tanganyicae* | | | |
| 1 | 2/5/98 | 0.006 | 0.006 | 0 | 0.006 | 0.207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.305 | 0 | 6.118 | 0 | | |
| 2 | 2/6/98 | 0.013 | 0 | 0 | 0.02 | 0.306 | 0.02 | 0 | 0 | 0.073 | 0.047 | 0 | 0 | 0.499 | 0 | 2.502 | 0.007 | | |
| 3 | 2/6/98 | 0.411 | 0.023 | 0 | 0.205 | 0.89 | 0.16 | 0.046 | 0.068 | 0.046 | 3.47 | 0 | 0 | 6.552 | 0 | 3.036 | 0 | | |
| 4 | 2/7/98 | 0.717 | 0.027 | 0 | 0.053 | 1.049 | 0 | 0.027 | 0 | 0 | 0.995 | 0 | 0 | 0.305 | 0 | 1.672 | 0 | | |
| 5 | 2/7/98 | 0.958 | 0 | 0 | 0.042 | 0.874 | 0.333 | 0 | 0 | 0 | 0.291 | 0 | 0 | 9.785 | 0 | 0.75 | 0 | | |
| 6 | 2/8/98 | 0.386 | 0.058 | 0 | 0 | 0 | 0.347 | 0 | 0 | 0.039 | 1.756 | 0 | 0 | 0 | 0 | 0.502 | 0 | | |
| 7 | 2/8/98 | 0.344 | 0 | 0 | 0.043 | 0 | 0.258 | 0 | 0 | 0 | 3.052 | 0 | 0 | 12.08 | 0 | 0.731 | 0 | | |
| 8 | 2/9/98 | 0.305 | 0 | 0 | 0.019 | 0.133 | 0.19 | 0 | 0.057 | 0 | 0.685 | 0 | 0 | 0 | 0 | 0.952 | 0 | | |
| 9 | 2/9/98 | 0.14 | 0 | 0 | 0 | 0.14 | 0.419 | 0 | 0 | 0 | 7.676 | 0 | 0 | 26.52 | 0 | 8.792 | 0 | | |
| 10 | 2/10/98 | 0.262 | 0 | 0 | 0 | 0.366 | 0.209 | 0 | 0 | 0.105 | 1.099 | 0 | 0 | 10.31 | 0 | 1.36 | 0 | | |
| 11 | 2/11/98 | 0.169 | 0 | 0 | 0.017 | 0.051 | 0.186 | 0 | 0 | 0.051 | 1.233 | 0 | 0 | 0.034 | 0 | 1.318 | 0 | | |
| 12 | 2/12/98 | 0.681 | 0 | 0 | 0.068 | 0 | 0.159 | 0 | 0.227 | 0.159 | 0.454 | 0 | 0 | 0.839 | 0 | 0.681 | 0 | | |
| 13 | 2/12/98 | 0.402 | 0 | 0 | 0 | 0.183 | 0.22 | 0 | 0 | 0.037 | 0.402 | 0 | 0 | 0.22 | 0 | 1.683 | 0 | | |
| 14 | 2/12/98 | 0.29 | 0 | 0 | 0.048 | 0.145 | 0.821 | 0 | 0 | 0 | 2.8 | 0 | 0 | 5.842 | 0 | 1.593 | 0 | | |
| 15 | 2/13/98 | 0.191 | 0 | 0 | 0.024 | 0.478 | 0.024 | 0 | 0 | 0.239 | 0.55 | 0 | 0 | 3.971 | 0 | 0.598 | 0 | | |
| 16 | 2/13/98 | 0.097 | 0 | 0 | 0 | 1.789 | 0.145 | 0 | 0.048 | 0.097 | 5.898 | 0 | 0 | 19.05 | 0 | 6.914 | 0 | | |
| 17 | 2/14/98 | 0.093 | 0 | 0 | 0.013 | 0.913 | 0.04 | 0.013 | 0 | 0.106 | 0 | 0 | 0 | 0.079 | 0 | 4.46 | 0 | | |
| 18 | 2/18/98 | 0 | 0 | 0 | 0 | 0.223 | 0 | 0 | 0 | 0.013 | 0 | 0 | 0 | 0.052 | 0 | 7.689 | 0 | | |



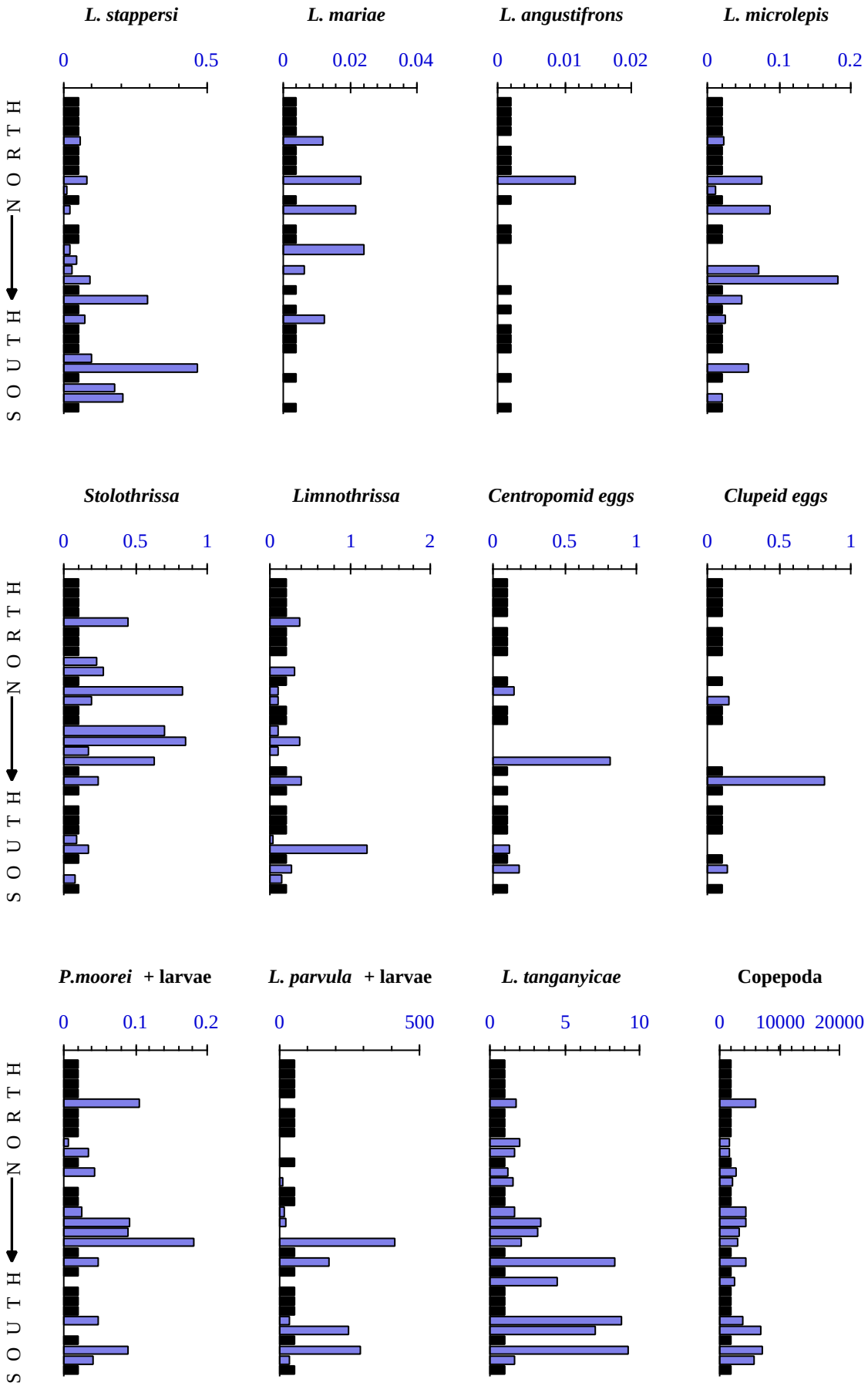

Graph A1: Number of specimen per cubic meter sampled during cruise nr. 9502 in the pelagic waters of Lake Tanganyika from the north to the south.
= no sample taken in that area



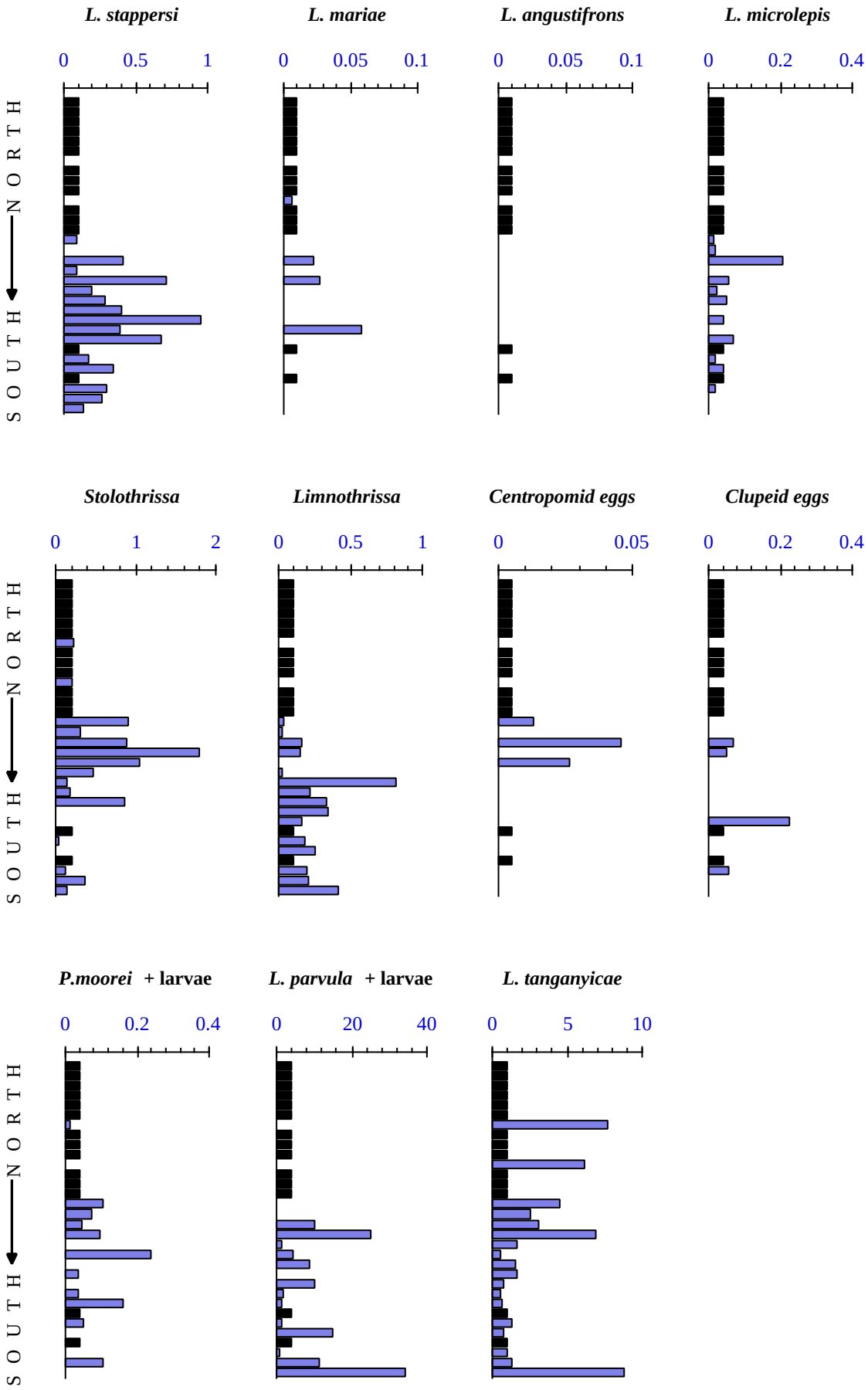

Graph A2: Number of specimen per cubic meter sampled during cruise nr. 9505 in the pelagic waters of Lake Tanganyika from the north to the south.
= no sample taken in that area




Graph A3: Number of specimen per cubic meter sampled during cruise nr. 9607 in the pelagic waters of Lake Tanganyika from the north to the south.
= no sample taken in that area




Graph A4: Number of specimen per cubic meter sampled during cruise nr. 9717 in the pelagic waters of Lake Tanganyika from the north to the south.
= no sample taken in that area




Graph A5: Number of specimen per cubic meter sampled during cruise nr. 9819 in the pelagic waters of Lake Tanganyika from the north to the south.
= no sample taken in that area