RESEARCH FOR THE MANAGEMENT
OF THE FISHERIES ON LAKE TANGANYIKA

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SEMI-INDUSTRIAL FISHING ON LAKE TANGANYIKA, WITH SPECIAL REFERENCE TO THE FISHERIES STATISTICS OF THE SEMI-INDUSTRIAL FISHING FLEET IN KALEMIE (ZAIRE), 10.92-11.93

by

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PREFACE

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

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

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

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1. INTRODUCTION

Fisheries statistics for zaïrian water bodies are generally non existent, and if they do, they were most often not collected continuously through time and mostly not very reliable. The reasons for this are numerous: no standardized national system of fisheries statistics data collection; lack of coordination between regional and national administrations ("Ministère de 1'Environnement, de la Conservation de la Nature et Tourisme"(MECNT) , "Service National de Promotion et de Développement de la Pêche" (SENADEP), Regional and Sub-regional coordinators, etc.; lack of financial and logistical means; lack of qualified and trained staff; lack of supervision; the deteriorated political and economical situation of the country; etc. (Jensen *et al.*, 1983; Villegas, 1984; Reynolds, 1992; Kisalima Katsongo *et al.*, 1993; Mambona Wa Bazolana, 1993 & 1994).

Lake Tanganyika, one of the big rift valley lakes in central/east Africa, is shared by Burundi, Tanzania, Zambia and Zaïre. For Zaïre, Lake Tanganyika is one of the major fishery resources for the whole country. With a surface area of 14,800 km2 , Zaïre possesses 45 % of the surface area of the Lake (Welcomme, 1972; Vanden Bossche & Bernacsek, 1990). Assuming a potential yield of 90 kg/ha/year, Corsi et al. (1986) and Mikkola & Lindqvist (1989) estimated the potential annual yield for the whole of Lake Tanganyika at 300,000 and 295,000 tonnes, respectively, and for the zaïrian waters only at 135,000 and 133,000 tonnes, respectively. Coulter (1981), assuming a potential yield between 116 and 140 kg/ha/year, proposes a potential annual yield between 171,000 and 207,000 tonnes for the zaïrian waters of the Lake (or between 380,000 and 460,000 tonnes for the whole Lake).

For 1988, the total annual catch for Lake Tanganyika was estimated at 88,1200 tonnes (Gréboval & Fryd, 1993). Most recent estimates of total catch in the zaïrian waters of Lake Tanganyika amount to 30,000 tonnes (Mikkola & Lindqvist, 1989), 25,000 tonnes (FAO/CIFAO/BAD, 1990) and 34,000 tonnes (Mambona Wa Bazolana, 1994) for 1988, 1990 and 1991, respectively. The estimate of Mikkola & Lindqvist is based on an estimated fishing effort of 4466 boats (mainly traditional and artisanal fishing units, but also a few semi-industrial purse seiners). An aerial frame survey in October 1992, however, counted 7570 canoes/boats for the zaïrian waters of the Lake (Hanek et al., 1992). This might imply that the total annual catch in these waters is considerably higher, in the order of 50,000 tonnes. With actual estimated total annual catches for Burundi, Tanzania and Zambia in the order of 24, 60 and 13 thousand tonnes, respectively, present total annual catches for Lake Tanganyika might amount to about 147,000 tonnes, which is nevertheless still far below the total potential yields estimated above.

Semi-industrial fishing in the zaïrian waters of Lake Tanganyika was introduced during the mid-fifties and continued to develop until the early seventies when an estimated 16 units were operational in Uvira and Kalemie. In May 1983, 8 units were

operational in Uvira and 14 in Kalemie (Jensen et al., 1983). At present, semi-industrial fishing on the zaïrian side of the Lake continues at a reduced level in Kalemie and Moba.

This report discusses the semi-industrial fishing around Lake Tanganyika and presents catch and effort data for the semi-industrial fishing units in Kalemie (Zaïre) for the period October 1992 - November 1993. Data for the whole period were collected by Mr. Demetre Detsimas, a greek semi-industrial fisherman in Kalemie. As a comparison, for the period July-November 1993, data were provided by Dr. Seundi Mbondi, "Coordinateur S/Régionale de 1'ECN" in Kalemie. LTR wishes to express its sincere gratitude to both and their staff for their help and assistance in collecting these data.

2. RESULTS

In the following paragraphs, the results of the semi-industrial fisheries data for Kalemie (Zaïre) covering the period October 1992 - November 1993 are presented (see also Tables 1 15). Chapter 3.1 compares these data with those collected by ECN for the period July-November 1993 (Tables 16 - 21).

2.1 Fishing effort

During the 14 months period considered, the total number of semi-industrial fishing units present at Kalemie varied between 14 and 17 because from January to March 1993 three units moved temporarily to Moba (south of Kalemie) and because at the end of the period considered one or more units moved to Mpulungu (Zambia). The semi-industrial fishing units belong to 7 fishing companies: Pêcherie des Grands Lacs ou P.G.L. (5 units), SOZAP (3), Katebe Katoto (4), Sotiris/Deka (1), Salim Salem ou S.S. (1), Methodiste ou PACPENS (1) , Communauté Evangélique Lutherienne du Zaïre-Est ou C.E.L.Z.E (2). In alphabetical order, the names of the 17 fishing units are the following: Aneto, Bilila, Eneka, Huruma, Kabimba (= Malaya), Kalundu, Kashobwe, Kiale (= Lubudi), Kiliba (= Kemba), Kizie, Lukuga, Lwama (= Pacpens) , Neema, Nyunzu, Pweto, Salongo and Tanganyika. In general, the purse seine nets have a length of about 200 m and go down to 68 meters of depth. one unit (Kabimba), however, has a net with a length of 274 meters and a depth of 110 meters.

The fishing effort during the period considered was not very regular: during several months, numerous units did not fish at all or very irregular due to engine breakdowns, lack of spare parts for the engines, fishing lamps, etc., lack of gasoline, bad weather, bad catches, etc. Figure 1 shows the number of fishing trips (boat unit nights), the number of active fishing units and the number of active fishing nights per lunar fishing cycle (almost 30 calendar days), on a monthly basis. There is a general tendency in time of decreasing monthly numbers for all three parameters, mainly due to lack of gasoline and spare parts. An absolute minimum for all three parameters is evident for June 1993, mainly because of reduced fishing activities due to bad catches.

For the whole period, an average of 10 units were active during an average of 16 fishing nights per lunar fishing cycle. The average number of night fishing trips (boat nights) was 93 per lunar cycle.

2.2 Total and monthly catches, as a whole and per species(group)

The, total catch for the 14 months period was 1129.8 tonnes with an average monthly total catch of 80.7 tonnes. On a yearly basis, the total catch in 1993 from the semi-industrial fishing in Kalemie can be estimated at around 1000 tonnes.

Total catch, per month, and by species is shown in Figure 2. Total monthly catches vary a lot (between 19 and 242 tonnes) and, like for the fishing effort, tend to decrease through time for the period considered.

2.3 Catch Per Unit of Effort (CPUE)

The average catch per semi-industrial fishing unit per fishing trip (boat night) or catch per unit of effort (CPUE) over the whole period was 866.4 kg/trip. The monthly variation of the CPUE (Fig. 3) is fluctuating between 436 and 1237 kg per fishing trip. However, in November 1993, a very high CPUE of 2160 kg per fishing trip was observed, mainly due to three very productive fishing days with daily CPUEs of 2948, 7219 and 5806 kg per fishing trip. But also in November 1992, the monthly CPUE was very high (second highest over the period considered).

2.4 Species composition and its fluctuations

The bulk of the catch (92.2 %) is composed of *Luciolates stappersii,* followed by the clupeids (6.8 %) *i.e. Stolothrissa* tanganicae (5.7 %) and *Limnothrissa miodon* (1.1 %), and the Lates *spp. (L. mariae, L. angustifrons, L. microlepis)* which constitute on the average 1% of the total catch.

Figure 4 shows the monthly percentage fluctuations of the four species(groups) for the whole period:

- *Luciolates stappersii* constituted in general between 87.3 and 98.7 % of the total catch; in January 1993, however, its contribution to the total catch dropped to 74.8 % due to a fishing week (19-25.01.93) during which *Luciolates* was completely or almost absent in the catches while *Stolothrissa* was the abundant species; over the whole 14 months period, this was the only time that *Luciolates* was not present in the catch;

- *Stolothrissa miodon* constituted in general between 0.4 and 11.2 of the total catch; two extremes were observed, the first one in January 1993 (23 %) when Luciolates was less abundant (see above), and the second one in June 1993 (o %) when *Stolothrissa* was completely absent in the catch during the whole fishing cycle; the presence of *Stolothrissa* in the catches was quite variable: during 6 out of 14 months (4,5,7,8,9,10.93) it appeared irregularly in the catches during about half of the days fished; during 4 months (10.92;

2,3,11.93) it was present only 1 to 3 days; during 2 months (11 and 12.92) it appeared every or almost every day; in January 93, *Stolothrissa* appeared very abundant only during a defined 9 day period during which *Luciolates* was completely or almost absent; and in June 1993, *Stolothrissa* disappeared completely from the daily catches;

- *Limnothrissa miodon* constituted in general between 0.5 and 5.0 % of the total catch, but disappeared completely from the catch during 3 months (12.92; 2 and 5.93); the presence of this species in the catches was very irregular: it was caught f or 1 day only (18 times), for 2 days (5 times), for 3 days (1 time), for 6 days (1 time) and for 13 days in a row (1 time);

- the 3 *Lates* species group constituted in general between 0. 2 and 2. 1 % of the total catch, but was completely absent in the catch during June 1993. From November 92 to March 93, *Lates* spp. was almost always present in the daily catches. During the other months the occurrence of *Lates* was more irregular.

When we lump the two clupeid species together and treat them as one group, the catch composition for *Luciolates stappersii,* the 2 clupeids and the Lates spp. and their fluctuations through time for the period considered can be presented as shown in Figure 5.

2.5 Contribution of semi-industrial catch to total catch

Considering an annual total semi-industrial catch of 1170 tonnes and a total annual catch of 3810 tonnes for the Kalemie region (Mambona Wa Bazolana, 1994), the semi-industrial catch in Kalemie for 1992 represents 31 % of the total annual catch.

3. DISCUSSION

3.1 comparison with ECN fisheries statistics

When we look at the available semi-industrial fisheries statistics collected by the staff of the Sub-Regional ECN Office of Kalemie for the period 7-11.93 (see Tables 17-21) and compare them with the statistics for the same period presented in Chapter 2, some striking differences are noticeable (see Table 16):

- total period ECN catch estimate is only 42 % and monthly estimates represent between 27 and 55 % of those presented in Chapter 2;

- total period ECN number of fishing trips recorded is only 92 % and monthly recordings represent between 80 and 109 % of those recorded in Chapter 2;

- average catch per fishing trip ECN estimate (408.7 kg) is only 45 % of the one (899.5 kg) presented in Chapter 2.

The following main reasons can be forwarded to explain the above differences:

- the statistics in Chapter 2 represent on-board recordings of the number of boxes of fish caught, while the ECN statistics are obtained from the fishing units when arriving in the port of Kalemie; between the fishing grounds and the port of Kalemie, however, a substantial amount of catch is sold or deviated on the water before arriving in Kalemie;

- the ECN staff missed the arrival in the port of several fishing units and consequently did not record their catches; they also used a lower average weight per fish box (20 kg) than the 22 kg used in the fisheries statistics of Chapter 2.

3.2 Review of semi-industrial fishing around Lake Tanganyika

Semi-industrial fishing started in the early fifties by some greec fishermen in Burundi and expanded quickly to Zaïre. Zambia (Mpulungu) followed in 1962 and Tanzania (Kigoma) in 1973-74.

3.2.1 Semi-industrial fishing effort

For 1989, Gréboval & Fryd mention 53 semi-industrial purse seine units fishing on Lake Tanganyika in Burundi (17), Tanzania (6), Zambia (14) and Zaïre (16). In Burundi, semi-industrial fishing activities are decreasing and moved more and more to the southern part of its waters (Bellemans, 1992). In Tanzania, from 6 units in 1988 (Tanzania Fisheries Division, 1988), 3 units remained in Kigoma in 1991 (Lyimo et al., 1993; Katonda & Kalangali, 1994). In Zambia, Pearce (1992) counted 15 units (14 in Mpulungu and 1 in Nsumbu) in 1990 and Lupikisha (1993) counted 16 and 20 units in 1991 and 1992, respectively. In 1991, Maes et al. (1991) counted one semi-industrial unit in Uvira and mention the presence of more units in Kalemie and Moba, Zaïre.

At present, semi-industrial fishing activities tend to decrease to negligible levels in Burundi, Tanzania and Zaïre because of numerous reasons: lower catches, higher operating costs, higher taxes, etc. This is the case for Burundi (14 units left), Tanzania (1 unit left) and also in Zaïre (around 15 units left in Kalemie and 5 in Moba) where, due to the political and economical turmoil, there is a chronic lack of spare parts, gasoline, fishing equipment, etc. In Zambia, on the contrary, and especially in Mpulungu, semi-industrial fishing activities (15 or more units) seem to stabilize or even to increase due to the fact that one or more zaïrian units have moved recently to Zambia.

3.2.2 semi-industrial catch

Tables 22 to 25 present compilations (based on data found in various publications, annual fisheries statistical country reports, etc.) of semi-industrial catch, total catch, number of semi-industrial units, percentage contributions of semi-industrial to total catch, etc. for the 4 riparian countries, per year, for the available data between 1950 and 1992. The author would be grateful

to any reader who could send us missing data to complete and correct, if needed, the above tables.

The percentage contributions of semi-industrial catch to total catch, per country are shown in Figure 6 and show that:

- for Zaïre and Burundi, semi-industrial catches contributed in the early seventies up to 65 % to the total catch and have dropped since to a present level of 2-4 % only;

- for Tanzania, the maximum contribution was 1.7 % in 1978 and has dropped to almost 0 % in recent years;

- for Zambia, the contribution of the semi-industrial catch varied during the last 20 years between 16 and 49 % and stabilized the last 10 years at a level between 35 and 47 %.

3.2.3 Semi-industrial catch species(group) composition and predator-prey relationship

Figures 7, 8 and 9 present, for the data available, the fluctuations in the percentage species(group) composition of the semi-industrial catches in Burundi, Kalemie (Zaïre) and Mpulungu (Zambia), respectively. They show that:

- there has been an exponential decline in the 3 *Lates* species catches (L. *angustifrons, L. mariae, L. microlepis)* in the beginning of each semi-industrial exploitation as observed by Coulter (1970), Herman (1977) and Pearce (1992); present catch levels of *Lates* spp. only constitute a few percent of the total semi-industrial catch;

- concerning the prey-predator relationship of the catches through time, there is an alternating increase and decrease in abundance of the prey Clupeids *(Stolothrissa tanganicae, Limnothrissa miodon)* and the predator *Luciolates stappersii,* not only intra- and inter-annually, but also in bigger cycles of 3 to 6 years (Mann et al., 1975; Chitamweba, 1990; Roest, 1992);

- apart from the above cycles, there seems to exist another pattern of two alternating longer periods (see Figs. 7 and 9):

* a period of about 14 years of extreme abundances of prey and predator (60-90 versus 5-30 %, respectively) , happening almost simultaneously in Burundi and Zambia for the period 1963-1978 and again as from the mid-eighties, with this difference that in Zambia, the predator *Luciolates stappersii* has become the extreme abundant species;

* a period of about 9-10 years during which prey and predator abundances are kept in a more or less equilibrium by alternating fluctuations between 30 and 70 %; again, this has been observed simultaneously for Burundi and Zambia for the period 1977-1987, and for the pre-1963 period in Burundi.

More data time series data are needed to be able to conf irm the latter observation. It almost seems that a period of more or less equilibrium between prey and predator abundances changes suddenly due to one or more triggering factors into a period during which or prey or predator abundances are favoured. Possible explanations for this phenomenon are not so obvious: is it caused by drastic changes in fishing effort (well or not targeted to one species group) , massive f ish migrations, failing or successful reproduction periods, food availability, limnological factors, etc. or a combination of one or more of these factors?

3.2.4 Catch per Unit of Effort (CPUE)

The evolution of the average annual catch per semi-industrial boat trip/night (CPUE) is presented in Figure 10 for the Burundi and Mpulungu (Zambia) fleets. It can be seen that:

- in Zambia, the CPUE decreased steadily from about 3.5 tonnes per boatnight at the onset of semi-industrial fishing in 1963 to about 1.3 tonnes per boatnight in 1991 due to an ever increasing fishing effort, especially in the mid-eighties; an expansion of the fishing grounds/area fished (almost 3 times bigger; Pearce, 1992) in the eighties has slowed down the CPUE decrease in recent years;

- in Burundi, the CPUE never reached the CPUE levels of Zambia (more productive waters due to upwelling phenomena), but also decreased steadily through time from about 1.3 tonnes per boat night in 1976 down to around 0.6 tonnes per boatnight in 1991; the reduction in semi-industrial fishing effort since 1985 and the change of fishing effort which is now more directed to the southern waters of Burundi have not been able to stop the CPUE decrease;

- as a comparison, the CPUE in Kalemie (Zaïre) for 1992-93 amounted to about 0.9 tonnes per boatnight (see also 2.3).

High fishing effort and as a result decreasing CPUE's lead to a situation where some not very efficient semi-industrial units do not break even any more and therefore pull out of the fishery (e.g. in Burundi).

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Fig. 1: Monthly number of active fishing trips, nights and units.

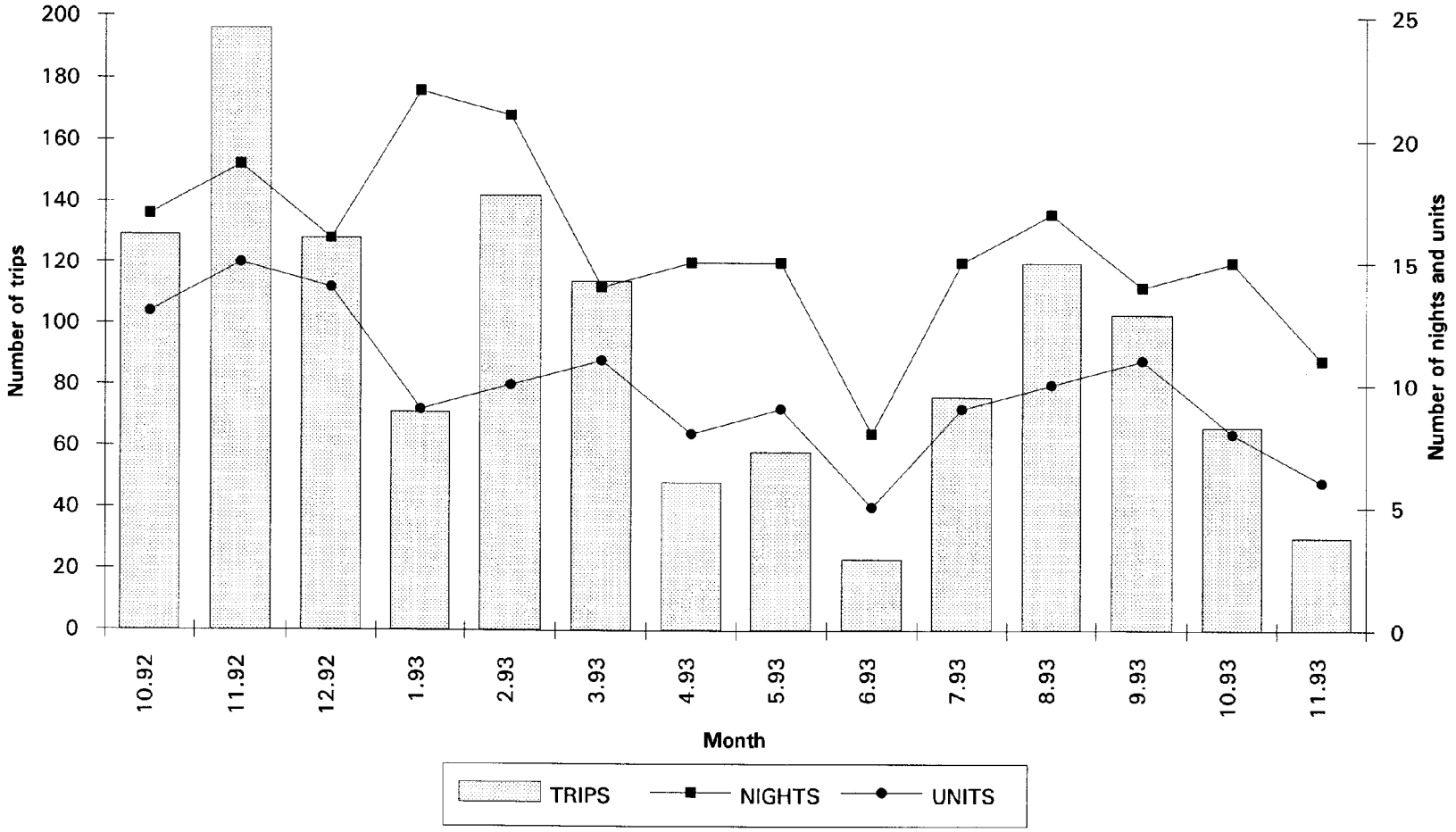

Fig. 2: Total catch, by month and per species.

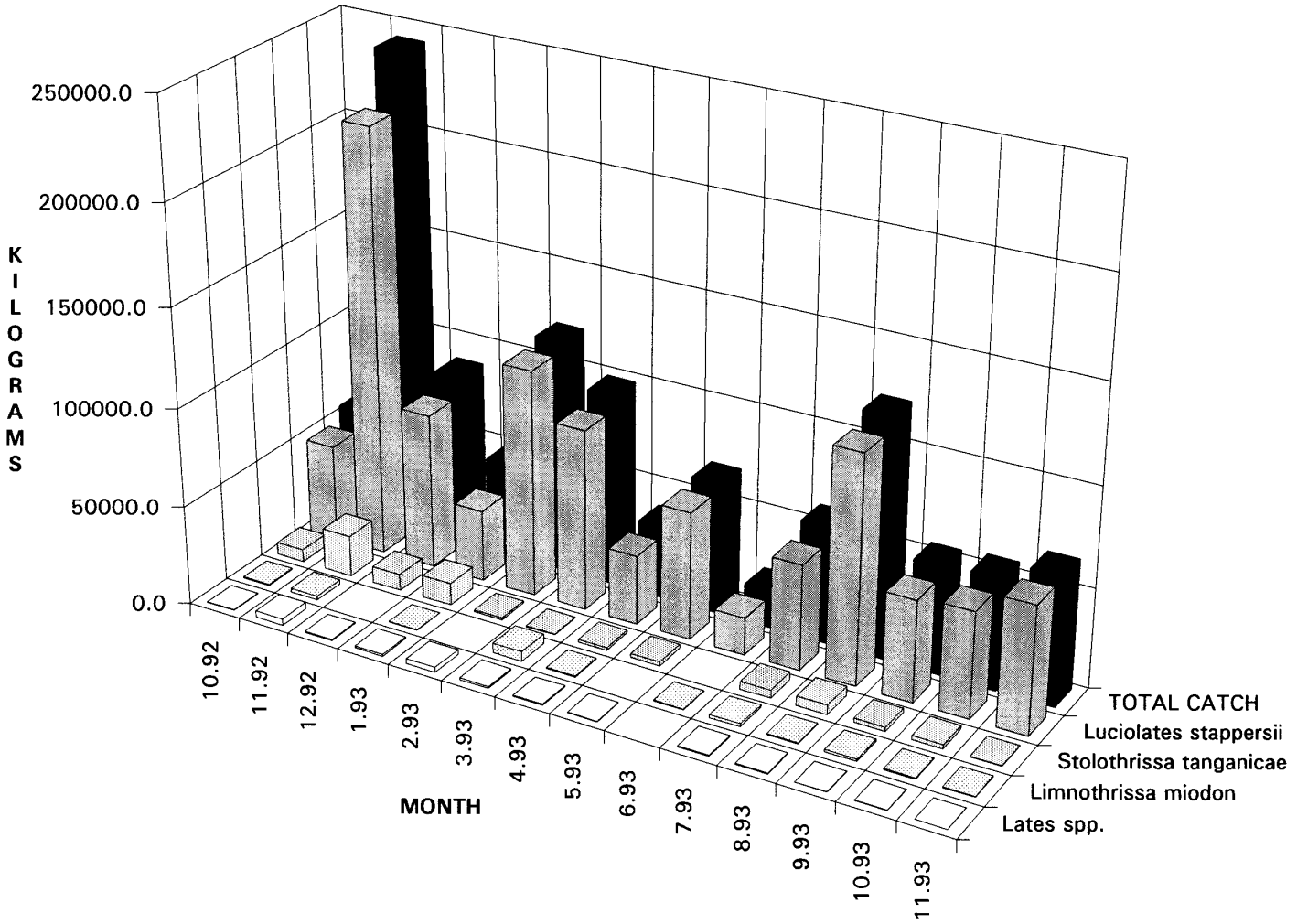

Fig. 3: Monthly total catches and average catch per trip (CPUE).

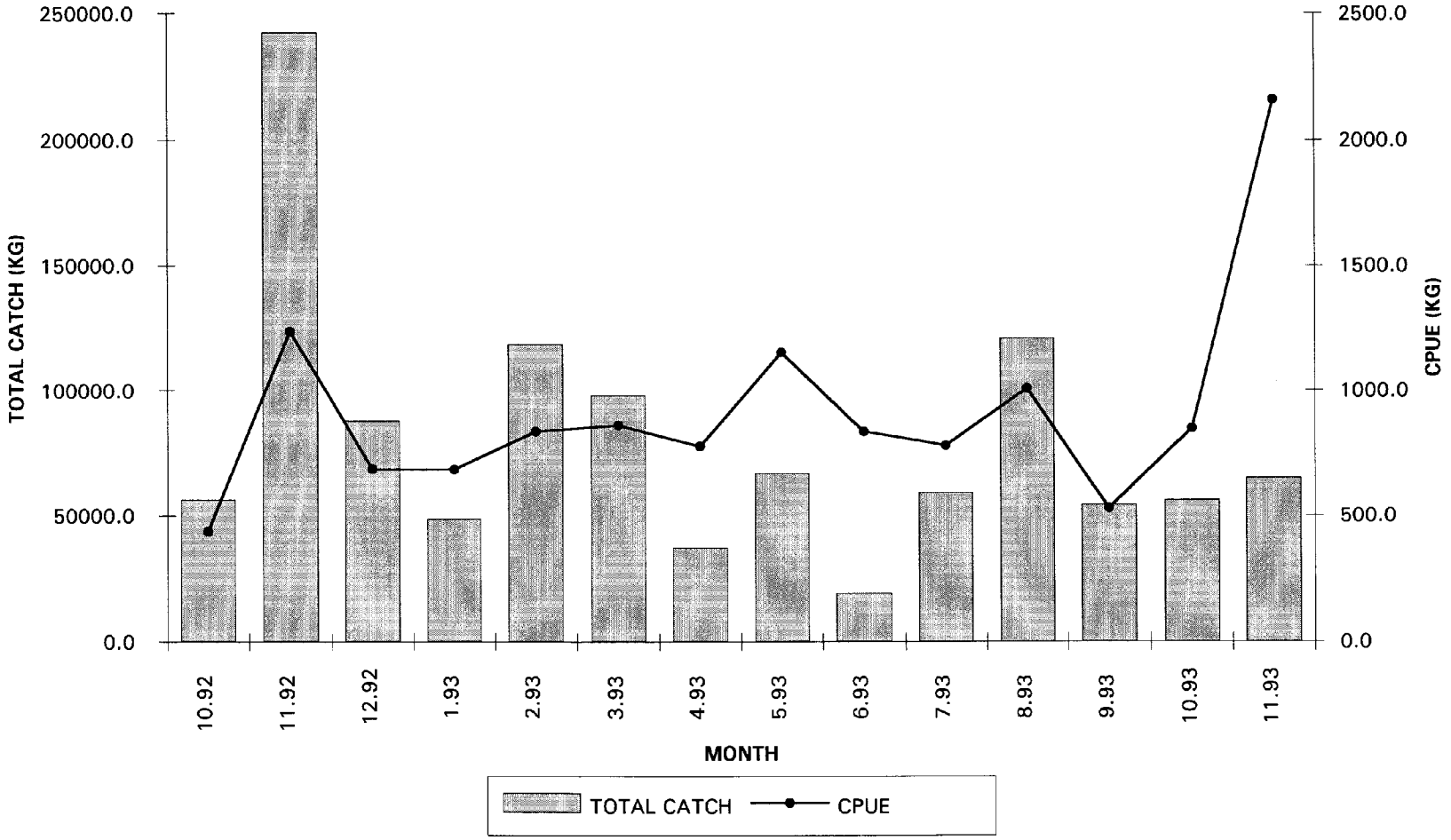

Fig. 4: Monthly catch species composition.

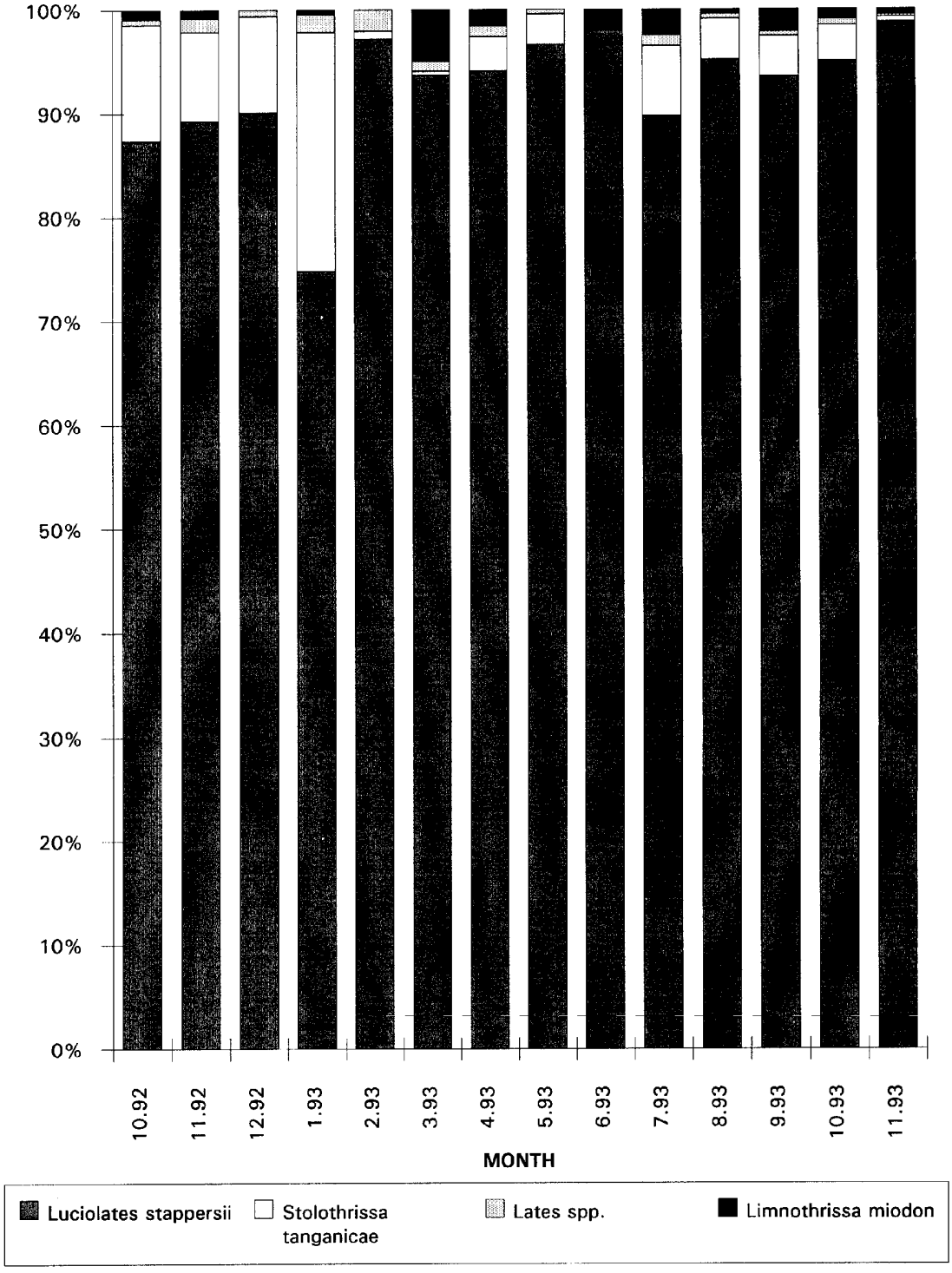

Fig. 5: Monthly catch composition.

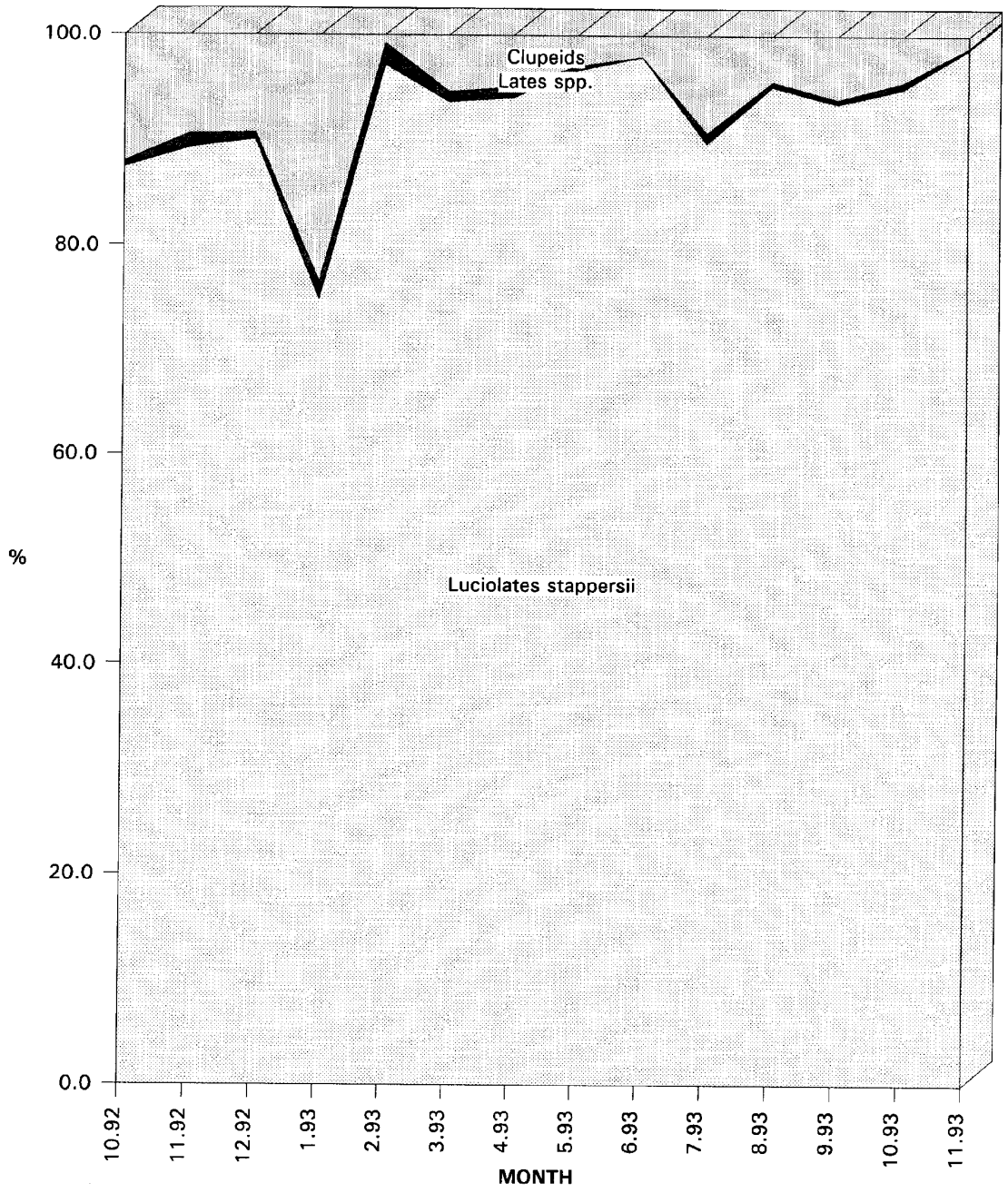

Fig. 6: Percentage contribution of semi-industrial catch to total catch, per country.

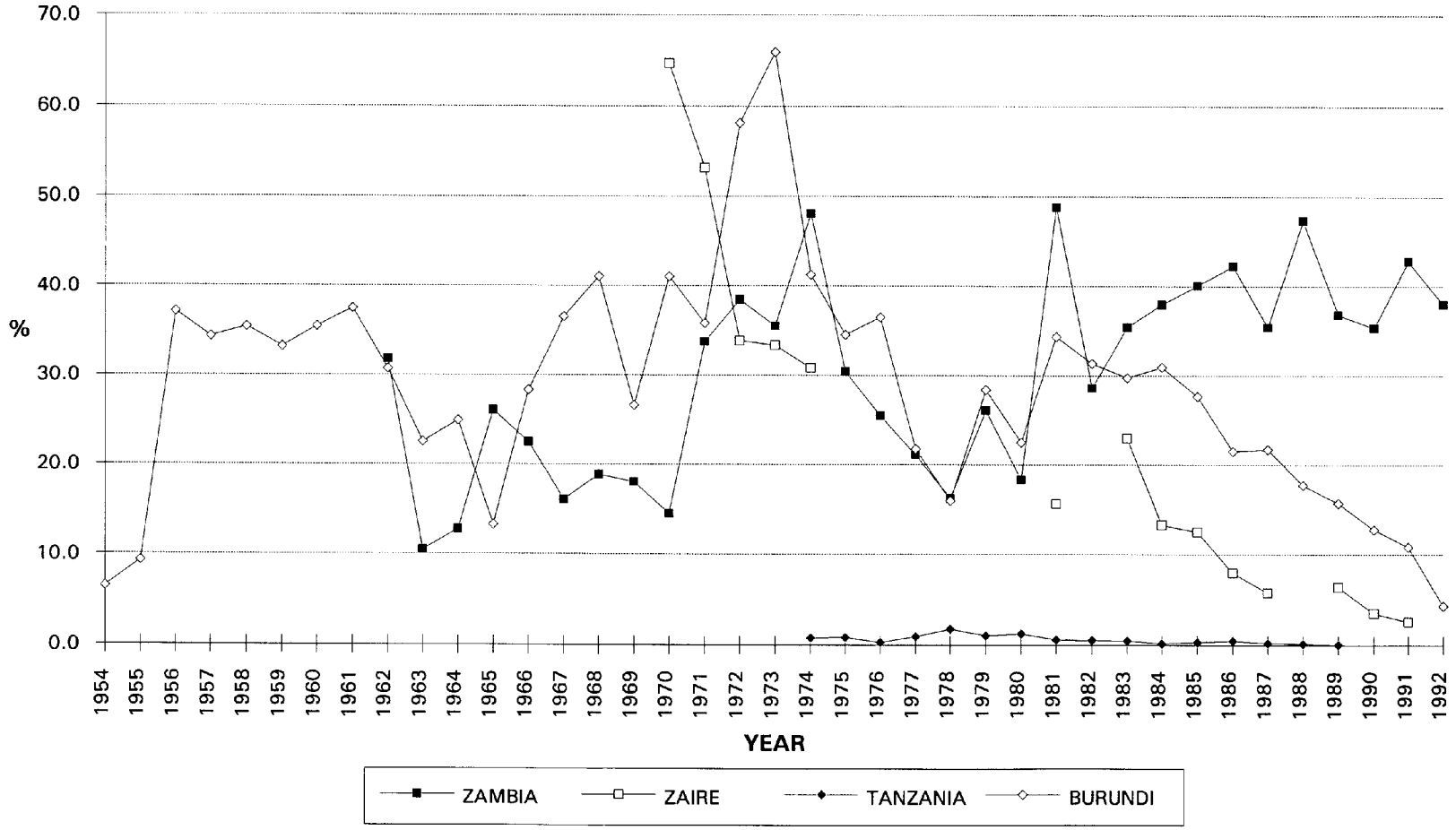

Fig. 7: Fluctuation in percentage species(group) composition of semi-industrial catches in Burundi

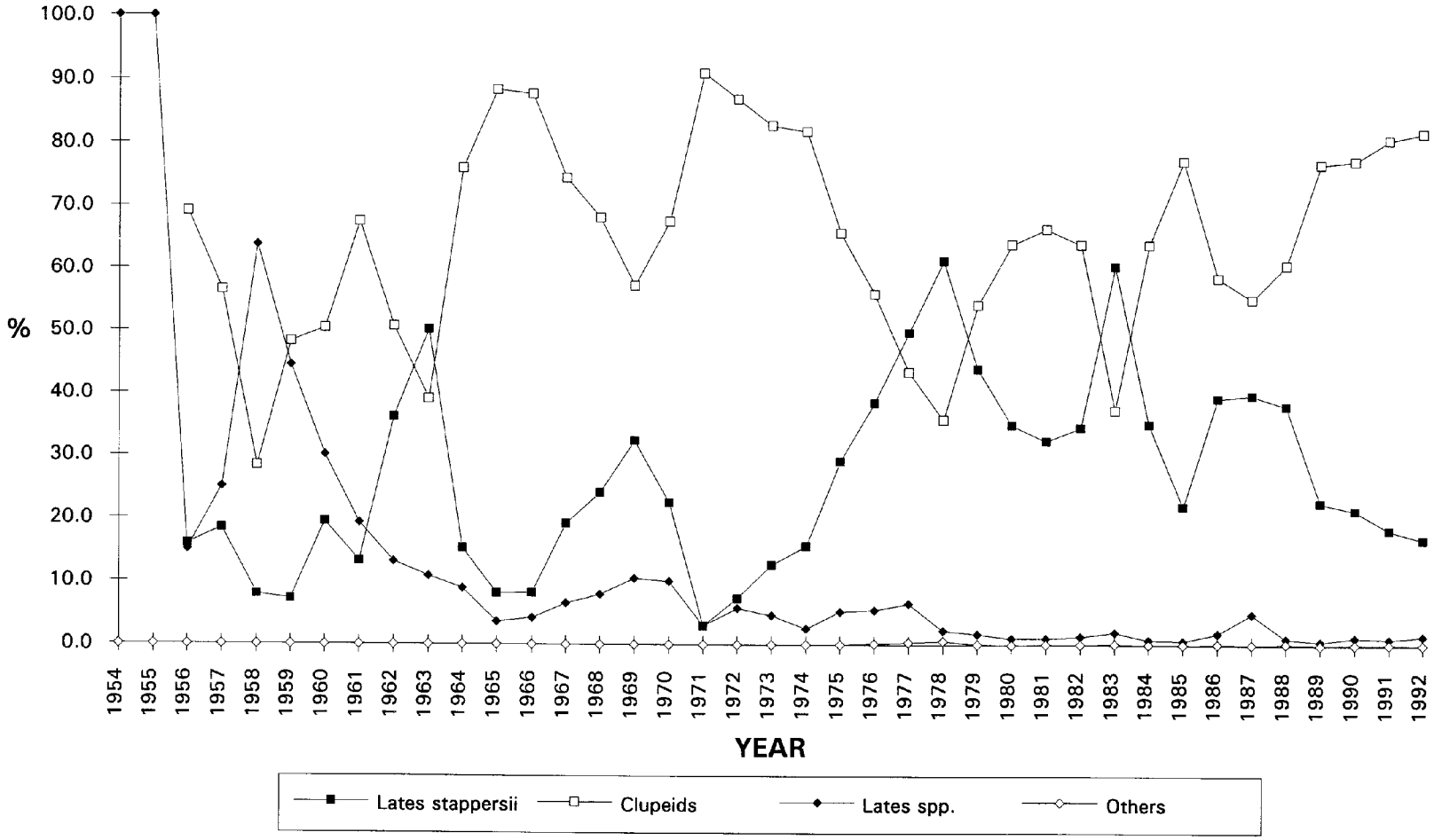

Fig. 8: Fluctuation in percentage species(group) composition of semi-industrial catches in Kalemie (Zaire)

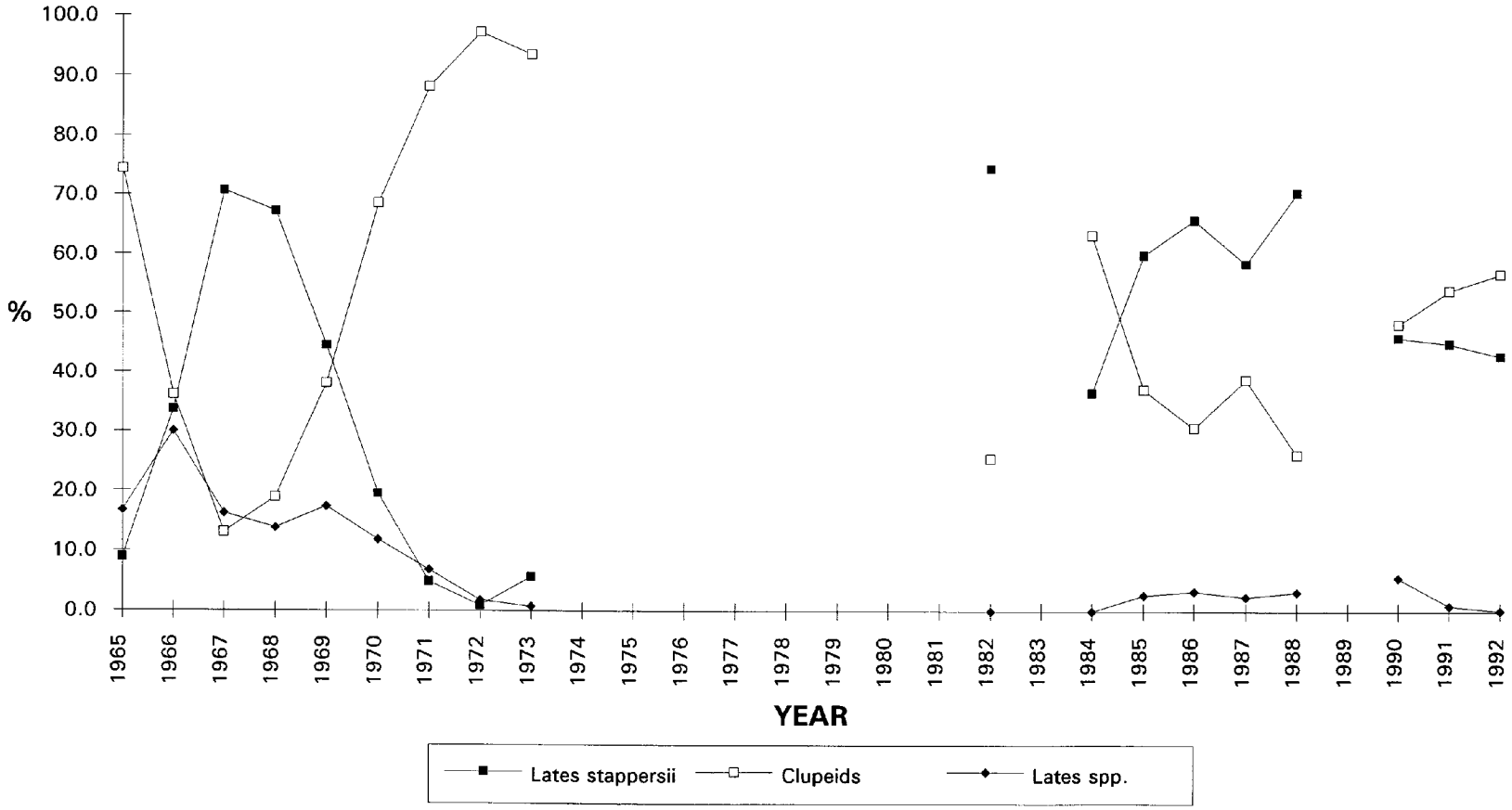

Fig. 9: Fluctuation in percentage species(group) composition of semi-industrial catches in Mpulungu (Zambia)

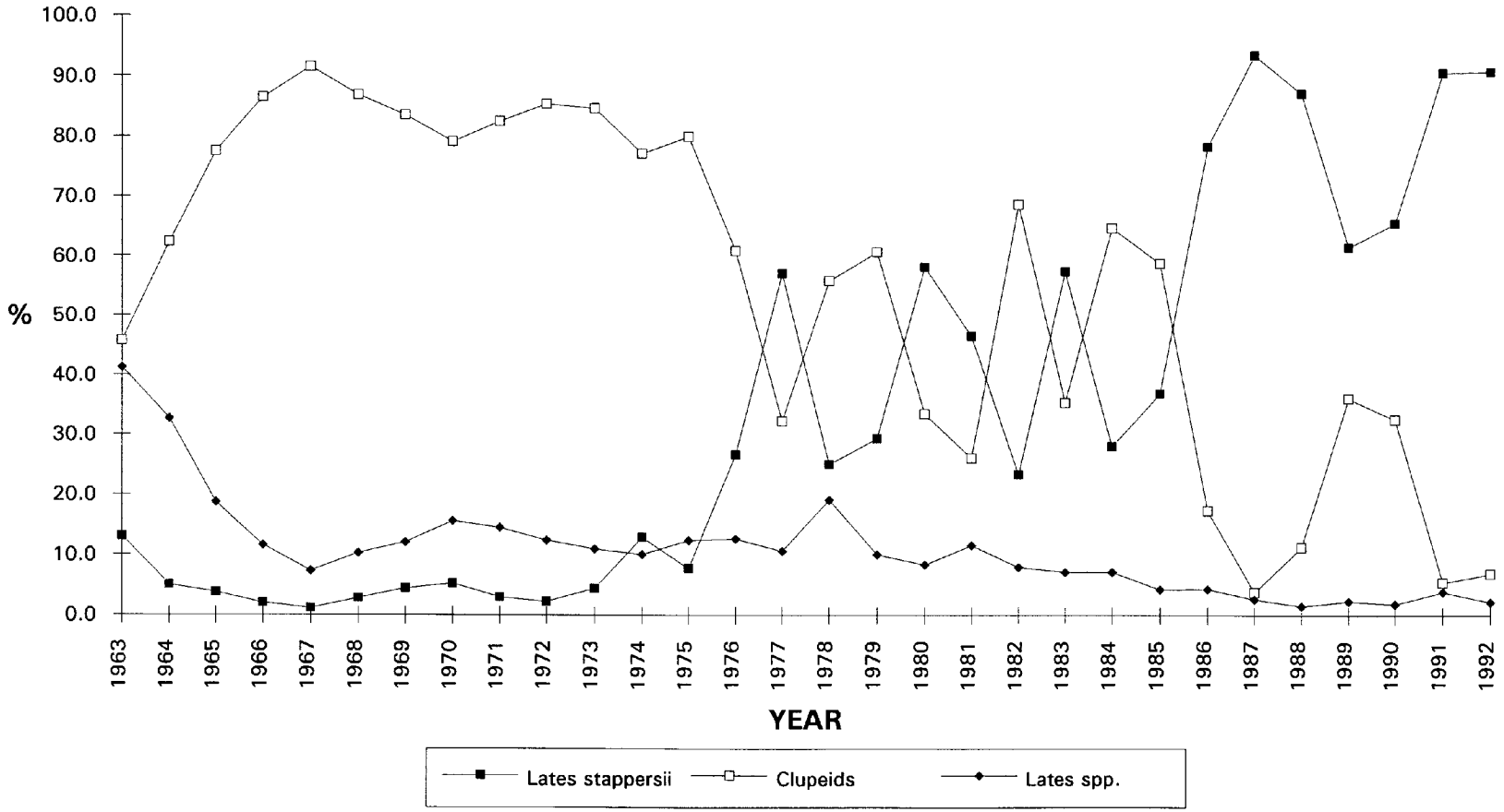

Fig. 10: Evolution of average annual catch per boat trip/night (CPUE) of the semi-industrial fishery in Burundi and Mpulungu (Zambia)

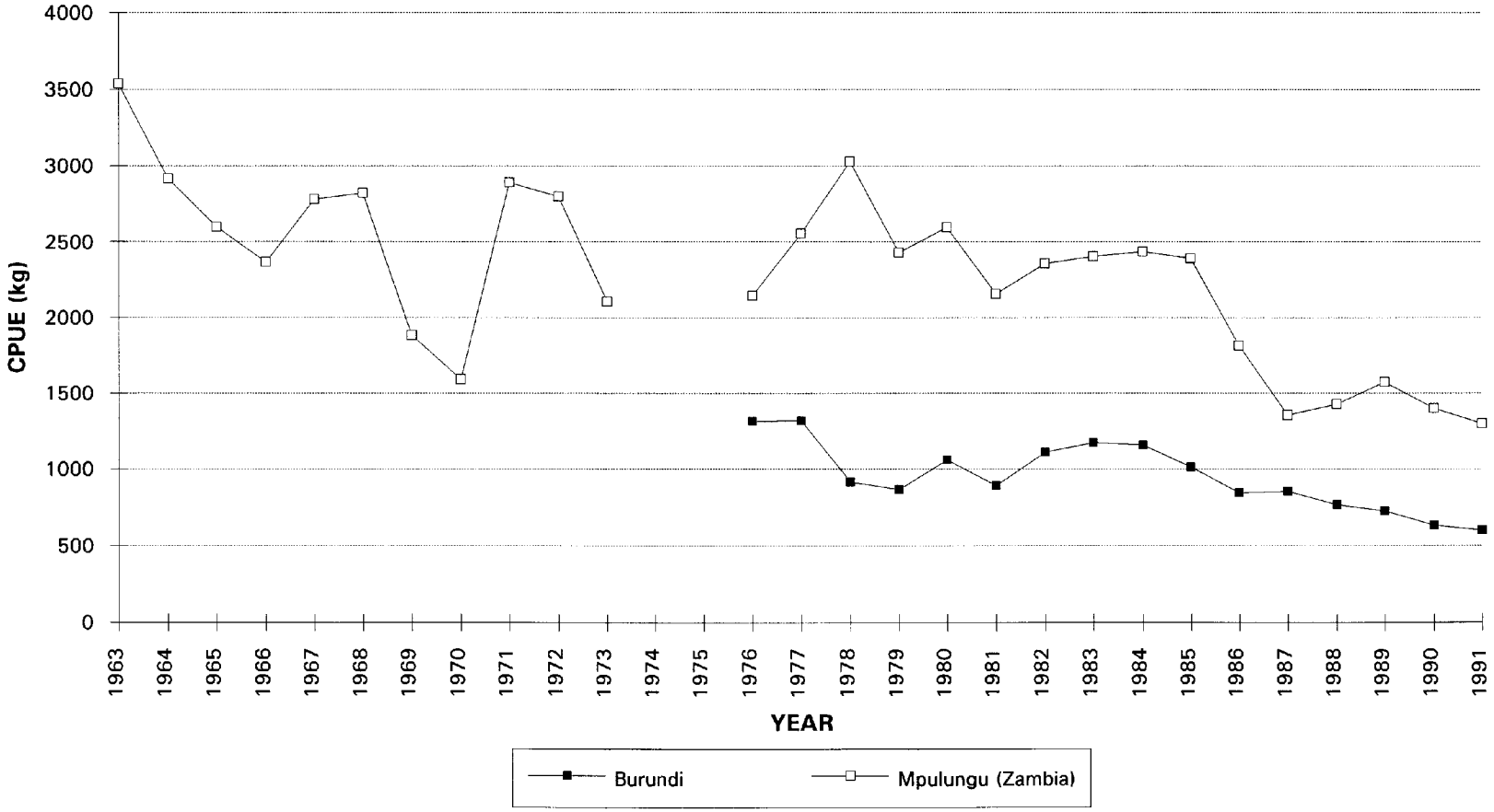

TABLE 1: Fisheries statistics, Kalemie (Zaire), 10.92 to 11.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 10–11.92 TO 11.93

Fishing cycles	Fishing nights	Active units	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
10–11.92	17.0	13.0	129.0	49093.0	6270.0	315.0	528.0	56206.0	435.7
11–12.92	19.0	15.0	196.0	216348.0	20834.0	3171.0	2068.0	242421.0	1236.8
12.92	16.0	14.0	128.0	79040.0	8160.0	552.0	0.0	87752.0	685.6
01–02.93	22.0	9.0	71.0	36300.0	11176.0	828.0	220.0	48524.0	683.4
02–03.93	21.0	10.0	142.0	115082.0	924.0	2448.0	0.0	118454.0	834.2
03.93	14.0	11.0	114.0	91718.0	396.0	921.0	4884.0	97919.0	858.9
04–05.93	15.0	8.0	48.0	34980.0	1254.0	366.0	594.0	37194.0	774.9
05.93	15.0	9.0	58.0	64570.0	1958.0	291.0	0.0	66819.0	1152.1
06.93	8.0	5.0	23.0	18810.0	0.0	0.0	396.0	19206.0	835.0
07.93	15.0	9.0	76.0	53097.0	4004.0	603.0	1496.0	59200.0	778.9
08.93	17.0	10.0	120.0	115082.0	4752.0	537.0	594.0	120965.0	1008.0
09.93	14.0	11.0	103.0	50864.0	2112.0	237.0	1188.0	54401.0	528.2
10.93	15.0	8.0	66.0	53108.0	1936.0	339.0	550.0	55933.0	847.5
11.93	11.0	6.0	30.0	63954.0	330.0	135.0	374.0	64793.0	2159.8
14.0	219.0	138.0	1304.0	1042046.0	64106.0	10743.0	12892.0	1129787.0	kg
Cycles				92.2	5.7	1.0	1.1	100.0	%

Average number of semi–industrial fishing units per cycle:	93.1	units
Average catch per industrial fishing unit per night:	866.4	kg
Average total catch per cycle:	80699.1	kg
Average number of active units per cycle:	9.9	units
Average number of active fishing nights per cycle:	15.6	nights

(Source: Demetre Detsimas (DD), Kalemie, Zaire) LTR/EC/TD16

TABLE 2: Fisheries statistics, Kalemie (Zaire), 10–11.92

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 17.10 – 02.11.92

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
17.10.92	5.0	3476.0	0.0	30.0	0.0	3506.0	701.2
18.10.92	8.0	2574.0	0.0	33.0	220.0	2827.0	353.4
19.10.92	10.0	1342.0	0.0	27.0	0.0	1369.0	136.9
20.10.92	9.0	2563.0	0.0	33.0	132.0	2728.0	303.1
21.10.92	8.0	1386.0	880.0	24.0	176.0	2466.0	308.3
22.10.92	6.0	1474.0	0.0	12.0	0.0	1486.0	247.7
23.10.92	7.0	3718.0	0.0	24.0	0.0	3742.0	534.6
24.10.92	9.0	3520.0	0.0	12.0	0.0	3532.0	392.4
25.10.92	9.0	2992.0	0.0	12.0	0.0	3004.0	333.8
26.10.92	5.0	924.0	5280.0	0.0	0.0	6204.0	1240.8
27.10.92	10.0	4862.0	110.0	24.0	0.0	4996.0	499.6
28.10.92	10.0	5148.0	0.0	39.0	0.0	5187.0	518.7
29.10.92	6.0	1936.0	0.0	0.0	0.0	1936.0	322.7
30.10.92	6.0	1606.0	0.0	0.0	0.0	1606.0	267.7
31.10.92	8.0	2992.0	0.0	0.0	0.0	2992.0	374.0
01.11.92	10.0	7018.0	0.0	45.0	0.0	7063.0	706.3
02.11.92	3.0	1562.0	0.0	0.0	0.0	1562.0	520.7
17.0	129.0	49093.0	6270.0	315.0	528.0	56206.0	kg
nights		87.3	11.2	0.6	0.9		%
Average number of semi–industrial fishing units per cycle:						7.6	units
Average catch per industrial fishing unit per night:						435.7	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 3: Fisheries statistics, Kalemie (Zaire), 11–12.92

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 16.11 – 04.12.92

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
16.11.92	5.0	9130.0	1276.0	105.0	0.0	10511.0	2102.2
17.11.92	7.0	8954.0	1188.0	165.0	88.0	10395.0	1485.0
18.11.92	11.0	11352.0	1936.0	174.0	0.0	13462.0	1223.8
19.11.92	13.0	7370.0	352.0	33.0	0.0	7755.0	596.5
20.11.92	13.0	12342.0	1738.0	249.0	0.0	14329.0	1102.2
21.11.92	13.0	6556.0	594.0	96.0	0.0	7246.0	557.4
22.11.92	11.0	8668.0	1364.0	159.0	176.0	10367.0	942.5
23.11.92	12.0	14542.0	1474.0	255.0	0.0	16271.0	1355.9
24.11.92	10.0	9504.0	1166.0	87.0	176.0	10933.0	1093.3
25.11.92	11.0	26378.0	1430.0	450.0	440.0	28698.0	2608.9
26.11.92	11.0	10912.0	880.0	120.0	0.0	11912.0	1082.9
27.11.92	11.0	8382.0	1012.0	222.0	110.0	9726.0	884.2
28.11.92	10.0	10362.0	880.0	195.0	110.0	11547.0	1154.7
29.11.92	12.0	9658.0	1232.0	150.0	198.0	11238.0	936.5
30.11.92	12.0	28556.0	1342.0	321.0	286.0	30505.0	2542.1
01.12.92	12.0	10472.0	1386.0	162.0	242.0	12262.0	1021.8
02.12.92	11.0	15334.0	880.0	126.0	198.0	16538.0	1503.5
03.12.92	7.0	3784.0	572.0	48.0	0.0	4404.0	629.1
04.12.92	4.0	4092.0	132.0	54.0	44.0	4322.0	1080.5
19.0	196.0	216348.0	20834.0	3171.0	2068.0	242421.0	kg
nights		89.2	8.6	1.3	0.9	100.0	%
Average number of semi–industrial fishing units per cycle:						10.3	units
Average catch per industrial fishing unit per night:						1236.8	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 4: Fisheries statistics, Kalemie (Zaire), 12.92

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 15.12 – 30.12.92

Date	Fishing Trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
15.12.92	3.0	600.0	60.0	6.0	0.0	666.0	222.0
16.12.92	5.0	2180.0	120.0	39.0	0.0	2339.0	467.8
17.12.92	7.0	1760.0	40.0	36.0	0.0	1836.0	262.3
18.12.92	8.0	3220.0	5000.0	84.0	0.0	8304.0	1038.0
19.12.92	7.0	7760.0	0.0	45.0	0.0	7805.0	1115.0
20.12.92	8.0	12380.0	380.0	84.0	0.0	12844.0	1605.5
21.12.92	9.0	9020.0	300.0	90.0	0.0	9410.0	1045.6
22.12.92	11.0	14040.0	200.0	27.0	0.0	14267.0	1297.0
23.12.92	11.0	5660.0	100.0	12.0	0.0	5772.0	524.7
24.12.92	10.0	4980.0	240.0	21.0	0.0	5241.0	524.1
25.12.92	11.0	5440.0	120.0	0.0	0.0	5560.0	505.5
26.12.92	9.0	2640.0	1200.0	33.0	0.0	3873.0	430.3
27.12.92	8.0	2840.0	120.0	0.0	0.0	2960.0	370.0
28.12.92	8.0	3960.0	220.0	63.0	0.0	4243.0	530.4
29.12.92	8.0	1820.0	60.0	12.0	0.0	1892.0	236.5
30.12.92	5.0	740.0	0.0	0.0	0.0	740.0	148.0
16.0 nights	128.0	79040.0	8160.0	552.0	0.0	87752.0	kg
		90.1	9.3	0.6	0.0	100.0	%
Average number of semi–industrial fishing units per cycle:						8.0	units
Average catch per industrial fishing unit per night:						685.6	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 5: Fisheries statistics, Kalemie (Zaire), 01–02.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 13.01 – 03.02.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
13.01.93	2.0	2684.0	0.0	48.0	0.0	2732.0	1366.0
14.01.93	5.0	4422.0	0.0	72.0	0.0	4494.0	898.8
15.01.93	6.0	7392.0	0.0	87.0	0.0	7479.0	1246.5
16.01.93	5.0	1166.0	0.0	39.0	0.0	1205.0	241.0
17.01.93	5.0	6204.0	0.0	84.0	0.0	6288.0	1257.6
18.01.93	3.0	88.0	1210.0	36.0	0.0	1334.0	444.7
19.01.93	2.0	0.0	3784.0	36.0	0.0	3820.0	1910.0
20.01.93	5.0	176.0	968.0	27.0	0.0	1171.0	234.2
21.01.93	2.0	0.0	1166.0	18.0	0.0	1184.0	592.0
22.01.93	2.0	0.0	1012.0	24.0	0.0	1036.0	518.0
23.01.93	3.0	154.0	594.0	21.0	0.0	769.0	256.3
24.01.93	2.0	0.0	1188.0	27.0	0.0	1215.0	607.5
25.01.93	3.0	0.0	1100.0	42.0	0.0	1142.0	380.7
26.01.93	3.0	990.0	154.0	45.0	0.0	1189.0	396.3
27.01.93	4.0	2222.0	0.0	48.0	220.0	2490.0	622.5
28.01.93	5.0	2750.0	0.0	33.0	0.0	2783.0	556.6
29.01.93	5.0	1650.0	0.0	42.0	0.0	1692.0	338.4
30.01.93	2.0	1540.0	0.0	51.0	0.0	1591.0	795.5
31.01.93	2.0	1958.0	0.0	36.0	0.0	1994.0	997.0
01.02.93	2.0	1738.0	0.0	12.0	0.0	1750.0	875.0
02.02.93	2.0	1056.0	0.0	0.0	0.0	1056.0	528.0
03.02.93	1.0	110.0	0.0	0.0	0.0	110.0	110.0
22.0 nights	71.0	36300.0	11176.0	828.0	220.0	48524.0	kg
		74.8	23.0	1.7	0.5	100.0	%
Average number of semi–industrial fishing units per cycle:						3.2	units
Average catch per industrial fishing unit per night:						683.4	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 6: Fisheries statistics, Kalemie, (Zaire), 02–03.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 12.02 – 04.03.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
12.02.93	4.0	1430.0	0.0	123.0	0.0	1553.0	388.3
13.02.93	4.0	6842.0	0.0	69.0	0.0	6911.0	1727.8
14.02.93	7.0	10560.0	0.0	99.0	0.0	10659.0	1522.7
15.02.93	8.0	1672.0	924.0	126.0	0.0	2722.0	340.3
16.02.93	8.0	4774.0	0.0	132.0	0.0	4906.0	613.3
17.02.93	8.0	4510.0	0.0	108.0	0.0	4618.0	577.3
18.02.93	7.0	2112.0	0.0	102.0	0.0	2214.0	316.3
19.02.93	9.0	7722.0	0.0	117.0	0.0	7839.0	871.0
20.02.93	9.0	4686.0	0.0	78.0	0.0	4764.0	529.3
21.02.93	6.0	3762.0	0.0	96.0	0.0	3858.0	643.0
22.02.93	9.0	3212.0	0.0	117.0	0.0	3329.0	369.9
23.02.93	5.0	2442.0	0.0	207.0	0.0	2649.0	529.8
24.02.93	7.0	8734.0	0.0	129.0	0.0	8863.0	1266.1
25.02.93	7.0	6160.0	0.0	102.0	0.0	6262.0	894.6
26.02.93	7.0	7282.0	0.0	120.0	0.0	7402.0	1057.4
27.02.93	9.0	4444.0	0.0	96.0	0.0	4540.0	504.4
28.02.93	5.0	2134.0	0.0	102.0	0.0	2236.0	447.2
01.03.93	6.0	11088.0	0.0	141.0	0.0	11229.0	1871.5
02.03.93	6.0	17094.0	0.0	150.0	0.0	17244.0	2874.0
03.03.93	7.0	3058.0	0.0	96.0	0.0	3154.0	450.6
04.03.93	4.0	1364.0	0.0	138.0	0.0	1502.0	375.5
21.0 nights	142.0	115082.0	924.0	2448.0	0.0	118454.0	kg
		97.2	0.8	2.1	0.0	100.0	%
Average number of semi–industrial fishing units per cycle:						6.8	units
Average catch per industrial fishing unit per night:						834.2	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 7: Fisheries statistics, Kalemie (Zaire), 03.93

KALEMIE – ZAIRE INDUSTRIAL UNITS (16) 17.03 – 31.03.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
17.03.93	2.0	484.0	0.0	36.0	0.0	520.0	260.0
18.03.93	4.0	1870.0	132.0	51.0	440.0	2493.0	623.3
19.03.93	8.0	11550.0	0.0	135.0	506.0	12191.0	1523.9
20.03.93	BAD WEATHER			NO FISHING			
21.03.93	10.0	10560.0	264.0	66.0	660.0	11550.0	1155.0
22.03.93	9.0	3828.0	0.0	66.0	176.0	4070.0	452.2
23.03.93	9.0	19008.0	0.0	171.0	726.0	19905.0	2211.7
24.03.93	10.0	3564.0	0.0	60.0	264.0	3888.0	388.8
25.03.93	9.0	10076.0	0.0	75.0	440.0	10591.0	1176.8
26.03.93	10.0	7612.0	0.0	60.0	264.0	7936.0	793.6
27.03.93	9.0	9196.0	0.0	51.0	374.0	9621.0	1069.0
28.03.93	8.0	4136.0	0.0	54.0	440.0	4630.0	578.8
29.03.93	8.0	4048.0	0.0	69.0	440.0	4557.0	569.6
30.03.93	9.0	2640.0	0.0	21.0	88.0	2749.0	305.4
31.03.93	9.0	3146.0	0.0	6.0	66.0	3218.0	357.6
14.0 nights	114.0	91718.0	396.0	921.0	4884.0	97919.0	kg
		93.7	0.4	0.9	5.0	100.0	%
Average number of semi–industrial fishing units per cycle:						8.1	units
Average catch per industrial fishing unit per night:						858.9	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 8: Fisheries statistics, Kalemie (Zaire), 04–05.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 13.04 – 02.05.1993

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
13.04.93	6.0	4862.0	286.0	66.0	110.0	5324.0	887.3
14.04.93	6.0	616.0	66.0	0.0	0.0	682.0	113.7
15.04.93	6.0	6160.0	308.0	108.0	242.0	6818.0	1136.3
16.04.93	5.0	2156.0	110.0	30.0	0.0	2296.0	459.2
17.04.93	3.0	550.0	0.0	0.0	0.0	550.0	183.3
18.04.93	4.0	1210.0	132.0	36.0	0.0	1378.0	344.5
19.04.93	4.0	836.0	0.0	0.0	0.0	836.0	209.0
20.04.93	5.0	3256.0	176.0	36.0	66.0	3534.0	706.8
21.04.93							
22.04.93			BAD WEATHER				
23.04.93							
24.04.93			NO FISHING				
25.04.93							
26.04.93	1.0	1760.0	0.0	0.0	0.0	1760.0	1760.0
27.04.93	1.0	660.0	0.0	0.0	0.0	660.0	660.0
28.04.93	1.0	1540.0	0.0	0.0	0.0	1540.0	1540.0
29.04.93	1.0	660.0	0.0	0.0	0.0	660.0	660.0
30.04.93	3.0	1430.0	176.0	45.0	176.0	1827.0	609.0
01.05.93	1.0	9240.0	0.0	45.0	0.0	9285.0	9285.0
02.05.93	1.0	44.0	0.0	0.0	0.0	44.0	44.0
15.0	48.0	34980.0	1254.0	366.0	594.0	37194.0	kg
nights		94.0	3.4	1.0	1.6	100.0	%
Average number of semi–industrial fishing units per cycle:						3.2	units
Average catch per industrial fishing unit per night:						774.9	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 9: Fisheries statistics, Kalemie (Zaire), 05.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 15.05 – 30.05.1993

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
15.05.93	1.0	506.0	176.0	0.0	0.0	682.0	682.0
16.05.93	2.0	220.0	0.0	0.0	0.0	220.0	110.0
17.05.93	1.0	462.0	66.0	15.0	0.0	543.0	543.0
18.05.93	2.0	352.0	0.0	0.0	0.0	352.0	176.0
19.05.93	1.0	396.0	0.0	15.0	0.0	411.0	411.0
20.05.93	2.0	3894.0	154.0	36.0	0.0	4084.0	2042.0
21.05.93			NO FISHING				
22.05.93	7.0	7194.0	352.0	54.0	0.0	7600.0	1085.7
23.05.93	5.0	11880.0	550.0	45.0	0.0	12475.0	2495.0
24.05.93	8.0	6248.0	286.0	36.0	0.0	6570.0	821.3
25.05.93	7.0	5632.0	110.0	18.0	0.0	5760.0	822.9
26.05.93	4.0	14696.0	110.0	60.0	0.0	14866.0	3716.5
27.05.93	4.0	6336.0	0.0	0.0	0.0	6336.0	1584.0
28.05.93	8.0	5258.0	154.0	12.0	0.0	5424.0	678.0
29.05.93	5.0	1408.0	0.0	0.0	0.0	1408.0	281.6
30.05.93	1.0	88.0	0.0	0.0	0.0	88.0	88.0
15.0	58.0	64570.0	1958.0	291.0	0.0	66819.0	kg
nights		96.6	2.9	0.4	0.0	100.0	%
Average number of semi–industrial fishing units per cycle:						3.9	units
Average catch per industrial fishing unit per night:						1152.1	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 10: Fisheries statistics, Kalemie (Zaire), 06.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 11.06–28.06.1993

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
11.06.93	3.0	12364.0	0.0	0.0	0.0	12364.0	4121.3
12.06.93	4.0	2552.0	0.0	0.0	0.0	2552.0	638.0
13.06.93	3.0	1320.0	0.0	0.0	0.0	1320.0	440.0
14.06.93	3.0	858.0	0.0	0.0	0.0	858.0	286.0
15.06.93	4.0	1012.0	0.0	0.0	0.0	1012.0	253.0
16.03.93	2.0	110.0	0.0	0.0	0.0	110.0	55.0
17.06.93	NO FISHING – BAD CATCH					0.0	
18.06.93						0.0	
19.06.93						0.0	
20.06.93						0.0	
21.06.93	1.0	0.0	0.0	0.0	396.0	396.0	396.0
22.06.93	NO FISHING – BAD CATCH					0.0	
23.06.93						0.0	
24.06.93						0.0	
25.06.93						0.0	
26.06.93						0.0	
27.06.93						0.0	
28.06.93	3.0	594.0	0.0	0.0	0.0	594.0	198.0
8.0	23.0	18810.0	0.0	0.0	396.0	19206.0	kg
nights		97.9	0.0	0.0	2.1	100.0	%
Average number of semi–industrial fishing units per cycle:						2.9	units
Average catch per industrial fishing unit per night:						835.0	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 11: Fisheries statistics, Kalemie (Zaire), 07.93

KALEMIE – ZAIRE INDUSTRIAL UNITS (17) 09.07 – 29.07.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
09.07.93	4.0	880.0	0.0	0.0	880.0	1760.0	440.0
10.07.93	4.0	3674.0	528.0	114.0	0.0	4316.0	1079.0
11.07.93	4.0	2893.0	462.0	27.0	0.0	3382.0	845.5
12.07.93	5.0	1804.0	0.0	12.0	0.0	1816.0	363.2
13.07.93	4.0	1826.0	66.0	12.0	0.0	1904.0	476.0
14.07.93	6.0	880.0	66.0	0.0	0.0	946.0	157.7
15.07.93	NO FISHING – BAD WEATHER						
16.07.93							
17.07.93	6.0	3828.0	638.0	225.0	440.0	5131.0	855.2
18.07.93	5.0	3674.0	792.0	21.0	0.0	4487.0	897.4
19.07.93	4.0	13420.0	176.0	75.0	110.0	13781.0	3445.3
20.07.93	7.0	6380.0	286.0	30.0	66.0	6762.0	966.0
21.07.93	6.0	4708.0	0.0	36.0	0.0	4744.0	790.7
22.07.93	NO FISHING – BAD WEATHER						
23.07.93							
24.07.93							
25.07.93							
26.07.93	4.0	2046.0	0.0	0.0	0.0	2046.0	511.5
27.07.93	4.0	3036.0	0.0	51.0	0.0	3087.0	771.8
28.07.93	7.0	2684.0	990.0	0.0	0.0	3674.0	524.9
29.07.93	6.0	1364.0	0.0	0.0	0.0	1364.0	227.3
15.0	76.0	53097.0	4004.0	603.0	1496.0	59200.0	kg
nights		89.7	6.8	1.0	2.5	100.0	%
Average number of semi–industrial fishing units per cycle:						5.1	units
Average catch per industrial fishing unit per night:						778.9	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 12: Fisheries statistics, Kalemie (zaire), 08.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 07.08 – 26.08.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
07.08.93	1.0	1760.0	0.0	0.0	0.0	1760.0	1760.0
08.08.93	5.0	4950.0	0.0	0.0	0.0	4950.0	990.0
09.08.93	7.0	11968.0	330.0	111.0	0.0	12409.0	1772.7
10.08.93	7.0	2134.0	110.0	0.0	0.0	2244.0	320.6
11.08.93	8.0	7106.0	462.0	51.0	0.0	7619.0	952.4
12.08.93	8.0	6402.0	154.0	12.0	0.0	6568.0	821.0
13.08.93	3.0	594.0	0.0	0.0	176.0	770.0	256.7
14.08.93	3.0	440.0	0.0	0.0	0.0	440.0	146.7
15.08.93							
16.08.93	NO FISHING – BAD WEATHER						
17.08.93							
18.08.93	9.0	8954.0	264.0	57.0	88.0	9363.0	1040.3
19.08.93	9.0	6402.0	154.0	39.0	0.0	6595.0	732.8
20.08.93	10.0	16742.0	264.0	30.0	176.0	17212.0	1721.2
21.08.93	9.0	17204.0	374.0	72.0	154.0	17804.0	1978.2
22.08.93	9.0	8272.0	220.0	33.0	0.0	8525.0	947.2
23.08.93	9.0	9504.0	1760.0	57.0	0.0	11321.0	1257.9
24.08.93	7.0	5214.0	660.0	51.0	0.0	5925.0	846.4
25.08.93	10.0	6138.0	0.0	24.0	0.0	6162.0	616.2
26.08.93	6.0	1298.0	0.0	0.0	0.0	1298.0	216.3
17.0	120.0	115082.0	4752.0	537.0	594.0	120965.0	kg
nights		95.1	3.9	0.4	0.5	100.0	%
Average number of semi–industrial fishing units per cycle:						7.1	units
Average catch per industrial fishing unit per night:						1008.0	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 13: Fisheries statistics, Kalemie (Zaire), 09.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 06.09 – 22.09.1993

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
06.09.93	7.0	1254.0	286.0	24.0	0.0	1564.0	223.4
07.09.93	6.0	1518.0	0.0	0.0	0.0	1518.0	253.0
08.09.93	4.0	1584.0	0.0	0.0	0.0	1584.0	396.0
09.09.93	9.0	3146.0	110.0	0.0	264.0	3520.0	391.1
10.09.93	8.0	11308.0	0.0	60.0	0.0	11368.0	1421.0
11.09.93	10.0	6028.0	308.0	0.0	440.0	6776.0	677.6
12.09.93	9.0	3498.0	0.0	27.0	0.0	3525.0	391.7
13.09.93	10.0	2332.0	0.0	0.0	0.0	2332.0	233.2
14.09.93							
15.09.93	NO FISHING – BAD WEATHER						
16.09.93							
17.09.93	9.0	6072.0	594.0	57.0	198.0	6921.0	769.0
18.09.93	5.0	4598.0	308.0	39.0	286.0	5231.0	1046.2
19.09.93	6.0	2398.0	66.0	6.0	0.0	2470.0	411.7
20.09.93	7.0	3146.0	242.0	24.0	0.0	3412.0	487.4
21.09.93	8.0	2882.0	198.0	0.0	0.0	3080.0	385.0
22.09.93	5.0	1100.0	0.0	0.0	0.0	1100.0	220.0
14.0	103.0	50864.0	2112.0	237.0	1188.0	54401.0	kg
nights		93.5	3.9	0.4	2.2	100.0	%
Average number of semi–industrial fishing units per cycle:						7.4	units
Average catch per industrial fishing unit per night:						528.2	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 14: Fisheries statistics, Kalemie (Zaire), 10.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 08.10 – 22.10.1993

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
08.10.93	6.0	616.0	0.0	0.0	0.0	616.0	102.7
09.10.93	3.0	1672.0	0.0	0.0	0.0	1672.0	557.3
10.10.93	5.0	1232.0	0.0	0.0	0.0	1232.0	246.4
11.10.93	6.0	4510.0	550.0	0.0	0.0	5060.0	843.3
12.10.93	6.0	880.0	330.0	39.0	0.0	1249.0	208.2
13.10.93	1.0	880.0	0.0	0.0	0.0	880.0	880.0
14.10.93	4.0	3432.0	264.0	75.0	0.0	3771.0	942.8
15.10.93	6.0	3608.0	132.0	81.0	110.0	3931.0	655.2
16.10.93	5.0	6820.0	110.0	0.0	242.0	7172.0	1434.4
17.10.93	4.0	16742.0	154.0	75.0	132.0	17103.0	4275.8
18.10.93	5.0	1936.0	0.0	0.0	0.0	1936.0	387.2
19.10.93	5.0	1826.0	176.0	27.0	0.0	2029.0	405.8
20.10.93	4.0	4290.0	220.0	12.0	66.0	4588.0	1147.0
21.10.93	3.0	1540.0	0.0	30.0	0.0	1570.0	523.3
22.10.93	3.0	3124.0	0.0	0.0	0.0	3124.0	1041.3
15.0 nights	66.0	53108.0	1936.0	339.0	550.0	55933.0	kg
		94.9	3.5	0.6	1.0	100.0	%
Average number of semi–industrial fishing units per cycle:						4.4	units
Average catch per industrial fishing unit per night:						847.5	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 15: Fisheries statistics, Kalemie (Zaire), 11.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 04.11 – 21.11.1993

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
04.11.93	3.0	352.0	0.0	0.0	0.0	352.0	117.3
05.11.93	NO FISHING – BAD WEATHER						
06.11.93	1.0	1320.0	0.0	0.0	0.0	1320.0	1320.0
07.11.93	2.0	990.0	0.0	0.0	0.0	990.0	495.0
08.11.93	2.0	638.0	0.0	0.0	0.0	638.0	319.0
09.11.93	3.0	286.0	0.0	0.0	0.0	286.0	95.3
10.11.93	NO FISHING – BAD WEATHER						
11.11.93							
12.11.93							
13.11.93							
14.11.93							
15.11.93							
16.11.93	1.0	880.0	0.0	0.0	0.0	880.0	880.0
17.11.93	3.0	8360.0	330.0	45.0	110.0	8845.0	2948.3
18.11.93	3.0	21340.0	0.0	54.0	264.0	21658.0	7219.3
19.11.93	4.0	23188.0	0.0	36.0	0.0	23224.0	5806.0
20.11.93	4.0	6050.0	0.0	0.0	0.0	6050.0	1512.5
21.11.93	4.0	550.0	0.0	0.0	0.0	550.0	137.5
11.0 nights	30.0	63954.0	330.0	135.0	374.0	64793.0	kg
		98.7	0.5	0.2	0.6	100.0	%
Average number of semi–industrial fishing units per cycle:						2.7	units
Average catch per industrial fishing unit per night:						2159.8	kg

(Source: DD, Kalemie, Zaire) LTR/EC/TD16

TABLE 16: Comparison between two sources of semi-industrial fisheries statistics, Kalemie (Zaire), 07-11.93

KALEMIE - ZAIRE SEMI-INDUSTRIAL UNITS 07.93 TO 11.93

Fishing cycles	Fishing nights	Active units	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
07.93	16.0	9.0	63.0	24880.0	2060.0	3745.0	1680.0	32365.0	513.7
08.93	19.0	11.0	131.0	54940.0	0.0	670.0	1400.0	57010.0	435.2
09.93	6.0	10.0	82.0	20280.0	0.0	560.0	380.0	21220.0	258.8
10.93	17.0	9.0	63.0	18940.0	100.0	610.0	400.0	20050.0	318.3
11.93	13.0	3.0	24.0	16900.0	0.0	630.0	180.0	17710.0	737.9
5.0	71.0	42.0	363.0	135940.0	2160.0	6215.0	4040.0	148355.0	kg
Cycles				91.6	1.5	4.2	2.7	100.0	%

Average number of semi-industrial fishing units per cycle:	72.6	units
Average catch per industrial fishing unit per night:	408.7	kg
Average total catch per cycle:	29671.0	kg
Average number of active units per cycle:	8.4	units
Average number of active fishing nights per cycle:	14.2	nights

(Source: ECN, Kalemie, Zaire)

KALEMIE - ZAIRE SEMI-INDUSTRIAL UNITS 10-11.92 TO 11.93

Fishing cycles	Fishing nights	Active units	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
07.93	15.0	9.0	76.0	53097.0	4004.0	603.0	1496.0	59200.0	778.9
08.93	17.0	10.0	120.0	115082.0	4752.0	537.0	594.0	120965.0	1008.0
09.93	14.0	11.0	103.0	50864.0	2112.0	237.0	1188.0	54401.0	528.2
10.93	15.0	8.0	66.0	53108.0	1936.0	339.0	550.0	55933.0	847.5
11.93	11.0	6.0	30.0	63954.0	330.0	135.0	374.0	64793.0	2159.8
5.0	72.0	44.0	395.0	336105.0	13134.0	1851.0	4202.0	355292.0	kg
Cycles				94.6	3.7	0.5	1.2	100.0	%

Average number of semi-industrial fishing units per cycle:	79.0	units
Average catch per industrial fishing unit per night:	899.5	kg
Average total catch per cycle:	71058.4	kg
Average number of active units per cycle:	8.8	units
Average number of active fishing nights per cycle:	14.4	nights

(Source: Demetre Detsimas (DD), Kalemie, Zaire) LTR/EC/TD16

TABLE 17: Fisheries statistics, Kalemie (Zaire), 07.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 09.07 – 27.07.1993

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
09.07.93	4.0	420.0	0.0	0.0	420.0	840.0	210.0
10.07.93	2.0	840.0	0.0	140.0	0.0	980.0	490.0
11.07.93	4.0	1640.0	0.0	0.0	0.0	1640.0	410.0
12.07.93	5.0	860.0	40.0	375.0	0.0	1275.0	255.0
13.07.93	4.0	1180.0	0.0	390.0	0.0	1570.0	392.5
14.07.93	6.0	500.0	80.0	435.0	0.0	1015.0	169.2
15.07.93							
16.07.93		NO FISHING					
17.07.93	6.0	2140.0	180.0	1395.0	340.0	4055.0	675.8
18.07.93	5.0	1040.0	1240.0	480.0	0.0	2760.0	552.0
19.07.93	4.0	8380.0	0.0	100.0	140.0	8620.0	2155.0
20.07.93	7.0	3460.0	0.0	15.0	120.0	3595.0	513.6
21.07.93	6.0	2140.0	0.0	0.0	0.0	2140.0	356.7
22.07.93	2.0	640.0	0.0	0.0	160.0	800.0	400.0
23.07.93							
24.07.93		NO FISHING					
25.07.93							
26.07.93	1.0	100.0	0.0	0.0	0.0	100.0	100.0
27.07.93	2.0	640.0	0.0	340.0	500.0	1480.0	740.0
28.07.93	3.0	580.0	500.0	75.0	0.0	1155.0	385.0
29.07.93	2.0	320.0	20.0	0.0	0.0	340.0	170.0
16.0 nights	63.0	24880.0	2060.0	3745.0	1680.0	32365.0	kg
		76.9	6.4	11.6	5.2	100.0	%
Average number of semi–industrial fishing units per cycle:						3.9	units
Average catch per industrial fishing unit per night:						513.7	kg

(Source: ECN, Kalemie, Zaire) LTR/EC/TD16

TABLE 18: Fisheries statistics, Kalemie (Zaire), 08.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 07.08 – 28.08.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
07.08.93	1.0	800.0	0.0	0.0	0.0	800.0	800.0
08.08.93	5.0	3200.0	0.0	0.0	0.0	3200.0	640.0
09.08.93	8.0	5280.0	0.0	0.0	0.0	5280.0	660.0
10.08.93	7.0	1360.0	0.0	45.0	0.0	1405.0	200.7
11.08.93	8.0	3820.0	0.0	0.0	0.0	3820.0	477.5
12.08.93	8.0	3640.0	0.0	15.0	0.0	3655.0	456.9
13.08.93	6.0	360.0	0.0	0.0	0.0	360.0	60.0
14.08.93	1.0	200.0	0.0	0.0	0.0	200.0	200.0
15.08.93							
16.08.93		NO FISHING – BAD WEATHER					
17.08.93							
18.08.93	9.0	4200.0	0.0	15.0	0.0	4215.0	468.3
19.08.93	9.0	1520.0	0.0	20.0	300.0	1840.0	204.4
20.08.93	10.0	7540.0	0.0	70.0	0.0	7610.0	761.0
21.08.93	9.0	7040.0	0.0	200.0	260.0	7500.0	833.3
22.08.93	9.0	3640.0	0.0	100.0	720.0	4460.0	495.6
23.08.93	10.0	3820.0	0.0	105.0	120.0	4045.0	404.5
24.08.93	8.0	1840.0	0.0	0.0	0.0	1840.0	230.0
25.08.93	11.0	3060.0	0.0	50.0	0.0	3110.0	282.7
26.08.93	5.0	2840.0	0.0	40.0	0.0	2880.0	576.0
27.08.93	3.0	260.0	0.0	0.0	0.0	260.0	86.7
28.08.93	4.0	520.0	0.0	10.0	0.0	530.0	132.5
19.0 nights	131.0	54940.0	0.0	670.0	1400.0	57010.0	kg
		96.4	0.0	1.2	2.5	100.0	%
Average number of semi–industrial fishing units per cycle:						6.9	units
Average catch per industrial fishing unit per night:						435.2	kg

(Source: ECN, Kalemie, Zaire) LTR/EC/TD16

TABLE 19: Fisheries statistics, Kalemie (Zaire), 09.1993

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 06.09 – 25.09.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
06.09.93	3.0	280.0	0.0	0.0	0.0	280.0	93.3
07.09.93	4.0	820.0	0.0	0.0	0.0	820.0	205.0
08.09.93	4.0	540.0	0.0	0.0	0.0	540.0	135.0
09.09.93	5.0	1080.0	0.0	30.0	120.0	1230.0	246.0
10.09.93	7.0	5060.0	0.0	10.0	0.0	5070.0	724.3
11.09.93	9.0	4780.0	0.0	10.0	0.0	4790.0	532.2
12.09.93	8.0	920.0	0.0	0.0	0.0	920.0	115.0
13.09.93	8.0	560.0	0.0	40.0	140.0	740.0	92.5
14.09.93	1.0	160.0	0.0	0.0	0.0	160.0	160.0
15.09.93							
16.09.93		NO FISHING – BAD WEATHER					
17.09.93	5.0	1540.0	0.0	65.0	0.0	1605.0	321.0
18.09.93	4.0	740.0	0.0	45.0	60.0	845.0	211.3
19.09.93	4.0	600.0	0.0	5.0	0.0	605.0	151.3
20.09.93	5.0	1020.0	0.0	140.0	60.0	1220.0	244.0
21.09.93	8.0	1440.0	0.0	150.0	0.0	1590.0	198.8
22.09.93	6.0	640.0	0.0	65.0	0.0	705.0	117.5
23.09.93							
24.09.93		NO FISHING – BAD WEATHER					
25.09.93	1.0	100.0	0.0	0.0	0.0	100.0	100.0
16.0 nights	82.0	20280.0	0.0	560.0	380.0	21220.0	kg
		95.6	0.0	2.6	1.8	100.0	%
Average number of industrial fishing units per cycle:						5.1	units
Average catch per industrial fishing unit per night:						258.8	kg

(Source: ECN, Kalemie, Zaire) LTR/EC/TD16

TABLE 20: Fisheries statistics, Kalemie (Zaire), 10.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 07.10 – 23.10.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
07.10.93	2.0	300.0	0.0	40.0	0.0	340.0	170.0
08.10.93	7.0	820.0	0.0	0.0	40.0	860.0	122.9
09.10.93	4.0	1080.0	0.0	30.0	0.0	1110.0	277.5
10.10.93	5.0	1000.0	0.0	20.0	200.0	1220.0	244.0
11.10.93	3.0	900.0	0.0	0.0	0.0	900.0	300.0
12.10.93	3.0	220.0	0.0	0.0	0.0	220.0	73.3
13.10.93	2.0	1020.0	0.0	280.0	0.0	1300.0	650.0
14.10.93	3.0	940.0	100.0	30.0	0.0	1070.0	356.7
15.10.93	5.0	1540.0	0.0	40.0	0.0	1580.0	316.0
16.10.93	5.0	2720.0	0.0	50.0	0.0	2770.0	554.0
17.10.93	3.0	1160.0	0.0	0.0	0.0	1160.0	386.7
18.10.93	5.0	1020.0	0.0	20.0	0.0	1040.0	208.0
19.10.93	5.0	1320.0	0.0	0.0	0.0	1320.0	264.0
20.10.93	4.0	2400.0	0.0	55.0	140.0	2595.0	648.8
21.10.93	3.0	1260.0	0.0	45.0	0.0	1305.0	435.0
22.10.93	2.0	1000.0	0.0	0.0	20.0	1020.0	510.0
23.10.93	2.0	240.0	0.0	0.0	0.0	240.0	120.0
17.0 nights	63.0	18940.0	100.0	610.0	400.0	20050.0	kg
		94.5	0.5	3.0	2.0	100.0	%
Average number of industrial fishing units per cycle:						3.7	units
Average catch per industrial fishing unit per night:						318.3	kg

(Source: ECN, Kalemie, Zaire) LTR/EC/TD16

TABLE 21: Fisheries statistics, Kalemie (Zaire), 11.93

KALEMIE – ZAIRE SEMI–INDUSTRIAL UNITS 04.11 – 22.11.93

Date	Fishing trips	Luciol. stappers.	Stolot. tangan.	Lates spp.	Limnot. miodon	TOTAL CATCH	CPUE
04.11.93	1.0	220.0	0.0	0.0	0.0	220.0	220.0
05.11.93	NO FISHING						
06.11.93	1.0	800.0	0.0	0.0	0.0	800.0	800.0
07.11.93	1.0	200.0	0.0	50.0	0.0	250.0	250.0
08.11.93	2.0	320.0	0.0	50.0	0.0	370.0	185.0
09.11.93	2.0	100.0	0.0	260.0	0.0	360.0	180.0
10.11.93	1.0	220.0	0.0	0.0	0.0	220.0	220.0
11.11.93	NO FISHING						
12.11.93							
13.11.93							
14.11.93							
15.11.93							
16.11.93	2.0	1460.0	0.0	20.0	0.0	1480.0	740.0
17.11.93	2.0	2000.0	0.0	0.0	120.0	2120.0	1060.0
18.11.93	3.0	7100.0	0.0	40.0	0.0	7140.0	2380.0
19.11.93	3.0	3740.0	0.0	30.0	0.0	3770.0	1256.7
20.11.93	3.0	520.0	0.0	180.0	0.0	700.0	233.3
21.11.93	2.0	220.0	0.0	0.0	20.0	240.0	120.0
22.11.93	1.0	0.0	0.0	0.0	40.0	40.0	40.0
13.0	24.0	16900.0	0.0	630.0	180.0	17710.0	kg
nights		95.4	0.0	3.6	1.0	100.0	%
Average number of industrial fishing units per cycle:						1.8	units
Average catch per industrial fishing unit per night:						737.9	kg

(Source: ECN, Kalemie, Zaire) LTR/EC/TD16

Table 22: **Fisheries statistical data concerning semi-industrial and total catch for L. Tanganyika, Burundi (1950-1992).**

YEAR	SIC	TRIPS	UNITS	L. ST.	CLUP.	LAT. SP.	OTHERS	TC	% TC
1950								1010	
1951								1500	
1952								3000	
1953								3200	
1954	317		2			317	0	4917	6.4
1955	482		2			482	0	5182	9.3
1956	1817		4	288	1257	272	0	4892	37.1
1957	2912		8	535	1648	729	0	8477	34.4
1958	3657		12	287	1038	2332	0	10333	35.4
1959	3346		12	240	1617	1489	0	10083	33.2
1960	2881		12	559	1454	868	0	8120	35.5
1961	1963		8	259	1326	378	0	5240	37.5
1962	2195		8	794	1114	287	0	7151	30.7
1963	2396		9	1201	936	259	0	10624	22.6
1964	2598		8	394	1974	230	0	10433	24.9
1965	2686		8	215	2376	95	0	20207	13.3
1966	5045		9	409	4426	210	0	17803	28.3
1967	4941		8	945	3677	319	0	13521	36.5
1968	5046		10	1213	3437	396	0	12288	41.1
1969	4138		11	1340	2367	431	0	15558	26.6
1970	5457		13	1227	3686	544	0	13291	41.1
1971	6054		15	180	5511	180	0	16896	35.8
1972	4327		13	316	3763	248	0	7443	58.1
1973	5621		14	707	4655	259	0	8525	65.9
1974	6211		15	967	5087	157	0	15062	41.2
1975	6144		18	1788	4037	319	0	17806	34.5
1976	8715	6628	22	3354	4877	472	12	23871	36.5
1977	6646	5044	19	3307	2886	431	22	30530	21.8
1978	4042	4408	17	2480	1447	91	24	25353	15.9
1979	4670	5400	20	2054	2534	79	3	16468	28.4
1980	6409	6050	22	2243	4101	64	1	28531	22.5
1981	5796	6515	22	1883	3852	58	3	16895	34.3
1982	5894	5313	21	2038	3773	78	5	18799	31.4
1983	5946	5071	19	3597	2222	119	8	19986	29.8
1984	6525	5638	20	2295	4173	53	4	21119	30.9
1985	4629	4566	17	1016	3581	30	2	16753	27.6
1986	4248	5025	17	1670	2492	80	6	19776	21.5
1987	3440	4037	16	1369	1900	168	3	15829	21.7
1988	3016	3939	16	1146	1831	32	7	17017	17.7
1989	3332	4602	16	752	2560	19	1	21190	15.7
1990	2748	4355	16	587	2127	33	1	21529	12.8
1991	2548	4265	15	464	2057	25	2	23498	10.8
1992	1091		14	183	893	15	0.2	25182	4.3

Abbreviations: SIC = Semi-industrial catch; TRIPS = boat nights; UNITS = number of semi-industrial boats
Catch in tonnes of : L. ST. = Lates stappersii; CLUP. = Clupeids; LAT. SP. = Lates spp.
TC = Total annual catch (tonnes); % TC = SIC/TC*100

Table 23: **Fisheries statistical data concerning semi-industrial and total catch for L. Tanganyika, Zaire (1950-1992), with details for the Kalemie, Uvira, Moba and Fizi regions.**

YEAR	SIC	UNITS	TC	% TC	TCKL	SICKL	UNKL	LSTKL	CLUPKL	LATKL	TCUV	SICUV	UNUV	LSTUV	CLUPUV	LATUV	TCMB	SICMB	UNMB	LSTMB	CLUPMB	LATMB	TCFZ
1950			2090																				
1951			2174																				
1952			2246																				
1953			2439																				
1954			4614																				
1955			6570																				
1956			8469			300	1																
1957			29500																				
1958			23400																				
1959																							
1960			35000																				
1961																							
1962																							
1963																							
1964																							
1965						2575		229	1916	430													
1966						1815		813	657	545													
1967						2589		1817	336	416													
1968						2533		1704	479	350													
1969						2365		1053	901	411													
1970	5000		7727	64.7		1823		375	1320	228	946												565
1971	5000		9406	53.2		2210		108	1951	151	1084												1679
1972	5000		14758	33.9		2191		19	2133	39	1477	639											741
1973	7331		22000	33.3		1921		109	1798	14	6700	2437											632
1974	4315		14000	30.8		750	6				3092	1409	8					0					1222
1975			17000				8																
1976			20000																				
1977																							
1978											4235	1986	9										1390
1979											2982	1328											4529
1980			15000								4783	2582											6831
1981		8	13000								4197	1849	8										3722
1982	2700		17300	15.6		1617	16	1131	386		2270	1208	8										7858
1983			17500								1817	930	8										3451
1984	3441		16000	22.9	5538	2319	14	851	1468		1920	1024	8	244	780			98					2161
1985	2123		16000	13.3	8091	1573	16	944	586	42	1655	496	4				3216	55	2				
1986	2141	15	17120	12.5	9378	1828		1205	562	60	1846	155	2				3810	108		101	2	3	2088
1987	1190		14978	7.9	10042	1143		669	445	28	481						3395	44		41		3	1060
1988	1734	18	30000	5.8	16563	1574		1111	412	51	960						7980	159		108			
1989		18			30873		15				1543						3831	49	1	49			
1990	1596		25000	6.4	14002	1453		670	702	81	1048	56	1				1683	87		86			1962
1991	1192	15	34190	3.5	26565	1067		481	577	10	1076		1				3069	124		124			2395
1992	1273	20	50000	2.5	3812	1170	17	503	666	2	805						1698	103		22			

Abbreviations: SIC = Semi-industrial catch; UNITS or UN (in combination with region abbreviation) = number of semi-industrial boats
Catch in tonnes of : LST = Lates stappersii; CLUP = Clupeids; LAT = Lates spp.
TC = Total annual catch (tonnes); % TC = SIC/TC*100
Regions: KL = Kalemie; UV = Uvira; MB = Moba; FZ = Fizi

Table 24: **Fisheries statistical data concerning semi-industrial and total catch fo L. Tanganyika, Zambia (1953-1992), with details for Mpulungu.**

YEAR	SIC	UNITS	TC	% TC	SICMP	TRIPMP	LSTMP	CLUPMP	OTHMP
1953			1200						
1954			2200						
1955			1560						
1956			1592						
1957			4446						
1958			3077						
1959			2971						
1960			2943						
1961			2000						
1962	660	1	2076	31.8	543			329	214
1963	807	1	7707	10.5	778	220	101	356	321
1964	1206	1	9438	12.8	1207	414	80	753	394
1965	1484	2	5691	26.1	1484	671	56	1150	278
1966	1293	2	5746	22.5	1318	557	26	1140	152
1967	1497	2	9317	16.1	1486	538	17	1370	109
1968	1624	2	8600	18.9	1622	575	46	1409	167
1969	1555	6	8621	18.0	1257	668	56	1050	151
1970	1572	5	10835	14.5	1054	669	56	842	166
1971	2360	4	6988	33.8	1498	518	45	1236	217
1972	2416	4	6281	38.5	2429	868	55	2074	300
1973	1949	4	5488	35.5	2035	966	90	1723	222
1974	2175	5	4522	48.1	2096		270	1616	210
1975	2261	5	7440	30.4	2433		187	1945	301
1976	1657	4	6501	25.5	1735	810	462	1055	218
1977	1659	3	7866	21.1	1666	652	951	538	177
1978	1050	2	6478	16.2	1069	353	268	597	204
1979	1100	2	4219	26.1	1100	453	323	667	110
1980	1508	2	8266	18.3	1508	681	878	504	126
1981	1892	3	3875	48.8	1892	878	880	493	219
1982	2290	3	8010	28.6	2289	971	535	1573	181
1983	3020	5	8522	35.4	3021	1257	1736	1069	216
1984	4471	9	11783	37.9	4459	1836	1257	2894	318
1985	5971	12	14900	40.1	5967	2495	2202	3509	256
1986	5484	15	12978	42.3	5484	3021	4297	949	238
1987	4411	16	12452	35.4	4312	3182	4035	163	114
1988	5035	18	10629	47.4	5035	3525	4390	568	77
1989	5293	19	14386	36.8	5294	3366	3260	1911	123
1990	5449	16	15419	35.3	5102	3650	3346	1661	95
1991	6041	16	14113	42.8	4560	3608	4139	246	175
1992	5253	20	13829	38.0	5253		4781	358	114

Abbreviations: SIC = Semi-industrial catch; UNITS = Number of semi-industr. boat
TRIP = boat nights
Catch in tonnes of : LST = Lates stappersii; CLUP = Clupeids
OTH = Other species
TC = Total annual catch (tonnes); % TC = SIC/TC*100
Region: MP = Mpulungu

Table 25: **Fisheries statistical data concerning semi-industrial and total catch for L. Tanganyika, Tanzania (1964-1991).**

YEAR	UNITS	SIC	TC	% TC
1964			16200	
1965			15700	
1966			15000	
1967			15000	
1968			15000	
1969			14184	
1970			46452	
1971			50568	
1972			49017	
1973			55922	
1974	3	590	76619	0.8
1975	3	530	64345	0.8
1976	3	220	73533	0.3
1977	3	550	61888	0.9
1978	4	635	36456	1.7
1979	4	460	44174	1.0
1980	4	470	38046	1.2
1981	4	240	44216	0.5
1982	3	220	44200	0.5
1983	4	195	44200	0.4
1984	4	117	107100	0.1
1985	5	320	114963	0.3
1986	5	306	69708	0.4
1987	5	183	93728	0.2
1988	6	74	62810	0.1
1989		20	59494	0.0
1990	1		64866	
1991			63503	

Abbreviations: SIC = Semi-industrial catch; UNITS = number of semi-industrial boa
TC = Total annual catch (tonnes); % TC = SIC/TC*100