

LAKE CHAD FISHERIES AND ITS IMPORTANCE
IN THE GREEN REVOLUTION PROGRAMME

by

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ABSTRACT

Lake Chad Fisheries contributes about 13% of all fish produced by the inland and coastal States of the nation and supports a large population of fishermen and allied workers.

The species of fresh water fish produced from the Lake such as Gymnarchus, Clarias and Heterotis are very popular with the fish consumers in Nigeria; hence Lake Chad processed fish is transported long distances to southern Nigerian markets. Lake Chad thus contributes significantly to the provision of fish protein and to the Green Revolution Programme.

Large scale post-drought recession of the lake water since 1973, has created ecological and hydrological changes which have caused increased growth of weeds, which impede fishing and navigational routes in the lake. The fish species composition and abundance have changed dramatically. The available water for irrigation has reduced drastically. There is urgent need for governmental action to undertake continuous monitoring of the hydrological and ecological changes; to estimate fish stocks and manage them, organise weed clearance; to provide fish processing boat building and other infrastructures and a good access road to the lake in order to promote the fishing industry in the lake.

The Lake Chad Basin is also a very prominent livestock and agricultural area and most of the investment in these activities depend on the Lake Water which is shared internationally with neighbouring countries.

INTRODUCTION

The Lake Chad fishery has been described as one of the richest inland water fisheries in the world with production figures of 80 kg - 100 kg per hectare. It supports a fishing population estimated at over 10,000 full-time/part-time and occasional fishermen, and a large labour force of traders and transport owners.

Conservative estimates put the local labour force indirectly benefiting from the fishery at around 100,000.

Traditionally, processed Lake Chad fish is transported to the main markets in Oritsha, Enugu, Jos, Maiduguri, Kano and to a small extent Lagos. In this way the Lake Chad fishery helps in achieving one of the objectives of the Green Revolution Programme by providing locally essential animal protein to a wide cross-section of the Nigerian population.

The moist conditions around the Lake Chad shores provide good agricultural land especially during period of receding water level when some of the fishermen take up farming of cereals and vegetables. It also provides a rich grazing ground for the cattle, sheep and goat of the Buduma and Fulani herdsmen.

FISH RESOURCES POTENTIAL OF LAKE CHAD

To date, no accurate data is available on the standing stock of the fishery in Lake Chad. It is known that traditional fishermen using hooks, nets, traps, and padding canoes shallow water boats and sometime calabashes landed a catch estimated at over 200,000 tonnes

per year immediately after the drought of 1973/74. This has now dropped to an estimated 100,000 tonnes per annum (1979).

There is a marked change in the ecological regime in the lake with a large area available for fishing before the drought now occupied by floating or submerged vegetation. The phenomenon of periodic extreme fluctuations in lake level has enhanced the growth and spreading of weeds like the free floating water lettuce (Pistia stratiotes) and the duck-weed (Lemna paucicostata) floating or fixed islands of papyrus (Cyperus papyrus), hippo grass (Vossia cuspidata) and the water grass (Echinocloa pyramidalis).

The weeds impede navigation and fishing and may be encouraging the increase in the snail vectors of bilharzia and malaria carrying mosquitoes.

The change in ecological regime has been followed by a drop in the catch landed and a reduction in the number of fish species now available for exploitation.

The main fish species presently exploited in the Nigerian part of the lake are Clarias, Tilapia, Heterotis and Gymnarchus. Other species like Alestes, Protopterus, Citharinus, Lates, etc., are caught in small quantities. The catch depends on the method of fishing and the fishing ground. Lates once predominant on the lake (pre 1980 era) is now mainly available from the deep waters of the lake mainly in the Camerounian and Chadian portions of the lake.

FISH PRODUCTION

The Lake Chad fishery provides 13% of the 524,123 tonnes of fish landed in Nigeria by the coastal and inland states.

Table 1 - Fish production by inland States: 1976 - 77
(in metric tonnes)

Years	1976	1977	1978	1979
Sub-Totals	155,119	156,742	165,274	167,235
<u>STATES</u>				
Anambra	3,982	3,982	4,039	4,247
Bauchi	3,386	2,412	2,445	2,572
Benue	8,906	9,010	9,141	9,602
Borno	62,886	63,483	70,679	67,797
Gongola	11,443	11,558	11,726	12,337
Kaduna	3,070	3,105	3,149	3,310
Kano	6,527	6,598	6,692	7,037
Kwara	15,358	15,531	15,756	16,557
Imo	1,484	1,500	1,520	1,601
Niger	103	104	104	111
Oyo	298	301	296	321
Plateau	2,630	2,412	2,445	2,572
Sokoto	36,089	36,499	37,029	38,908

Source: - Federal Department of Fisheries Statistics

Based on this information, production from coastal and inland States when combined, places Borno State third. Borno State derives most of its fish from Lake Chad. The importance of Lake Chad as a major fresh water fish producing centre is therefore obvious. When the inland States' production is considered alone, Borno State leads them in fish production. Without questioning the accuracy of the above statistics, it is known that Lake Chad contributes significantly to the animal protein needs of Nigeria. It should also be noted that the Lake Chad Basin also supports large herds of cattle, sheep, goats, camels, donkeys, etc., which contribute additional animal protein. In a survey carried out by Lake Chad Research Institute in June, 1981, 2.1 million cattle, 341,000 sheep and 510,000 goats were counted in parts of Lake Chad Basin. The total livestock is more than these.

FISH TRAFFIC CENSUS

The fish production figures for processed and freshfish recorded on the Baga Road Fish Traffic census are shown in Table 2.

The fish traffic census data may not be that accurate but it serves as a good indicator of the amount of fish originating from Lake Chad to the Nigerian market. It is also indicative of the substantial investment in vehicles for transporting fish. The data shows clearly the peak from production season in the months of April, June, July and August, and low production season in October, November, December and January, which are the cold months in Lake Chad with water temperatures going down to 16°C. The fishermen may be reluctant to go fishing frequently in the cold wintery months and in the very hot season in May. The effect of changing water temperatures on fish production is yet to be fully investigated. Fish is considered to take refuge under the weeds when the water temperature is too high (reaches 37°C in May) or too low. This phenomenon may account partly for the low production at some periods of the year in extreme hot and cold seasons.

UTILIZATION OF LAKE CHAD FISH

The distant location of the Lake Chad Fishery from huge fish consuming population in southern parts of Nigeria has encouraged traditional fish processing by smoking. An estimated 80% of the catch is traditionally processed, (smoked) while the remaining 20% is consumed fresh around the Lake or transported in Ice to Maiduguri and Kano.

A small portion of the 20% is sundried and sold in markets in the northern States where sundried fish (buni) is popular.

Figure 1 shows the main distribution routes of Lake Chad fish both fresh/chilled and processed. Although no data is available on the fish consumption pattern of the Nigerian population; it can be said that Onitsha and Enugu markets lead in marketing of Lake Chad processed fish followed by Jos and Kano. Limited quantities of Lake Chad fish find their way to Lagos. There is in general, unlimited demand of Lake Chad fish. Lake Chad fresh fish goes mainly to Maiduguri, Kano and Kaduna.

The marketing and distribution of Lake Chad fish is controlled by experienced fish traders who form a complicated chain of buying and selling. These traders are the sole distributors of Lake Chad fish.

PROBLEMS FACING LAKE CHAD FISHERY

The phenomenon of fluctuating water levels on the lake has resulted in encroachment of weeds and floating islands which interfere with fishing and transportation of goods and fish. This may be partly responsible for the low catches and delays quick transportation of fish from the fishing grounds to the processing/marketing sites. Consequently, fish earmarked for processing is in advanced stages of spoilage on arrival at the processing/marketing sites leading to

low quality of processed fish.

With research provided by the Research Institute assisted by FAO/UNDP Project, advice has been given on how to tackle the weed problem on the lake in order to facilitate fast transportation by clearing the navigation routes. Research is still going on, on clearance by herbicides. Advice has also been provided to fish processors on how to improve the quality of processed fish by adhering to good handling, processing and storage conditions. Improved Ivory-Coast type smoking kilns have been introduced in the Lake Area.

Massive mechanical weed clearance can be done by the Federal or State Governments as a means of promoting the fishing activities in the Lake. There is also the need to train extension workers who will teach fishermen correct handling and processing techniques so as to reduce spoilage and losses of processed fish. This will ensure that fish reaches the consumer in a healthy state.

The road linking Baga and Maiduguri happens to carry 80% of the fish going to the major consumer markets. The condition of the road has remained unattended for over 3 years now, making it virtually impassable. Rehabilitation of this important link road will enhance evacuation of processed fish and other food items from Lake Chad. This will increase the contribution of the Lake to food production and the Green Revolution.

FISH CO-OPERATIVES

The Baga Fisheries Co-operatives which could act as a good vehicle for organizing the management of the fish markets, distribution of ice (from the two receiving stations at Baga) and even participate in processing and marketing of fish has remained without trained personnel and cooperative outlook. It is considered necessary to activate this cooperative to play its role in making better use of loans available from the Government to provide more fish to the ever demanding population.

SUMMARY AND RECOMMENDATIONS

The Lake Chad fishery contributes an estimated 13% of the fish landed by coastal and inland states and therefore contributes a substantial part of the fish protein needs of the population.

There is a changing ecological regime on the lake which tends to favour certain fish species and cause the disappearance of other fish species. Consequently, there is an urgent need to assess the standing stock of all fish resources in the lake and to set up a management and monitoring system to ensure rational and sustained exploitation of the fishery for the benefit of future generations.

Greater cooperation of all Institutions responsible in one way or another with Lake Chad resources is required to ensure optimum utilization of manpower and financial resources to better manage and administer the fishery resources.

Through the cooperative programme, organised extension service which is now virtually absent can be set up to act as an advisory link to the fishing community. The extension service is required to transfer research results to the users and vice versa.

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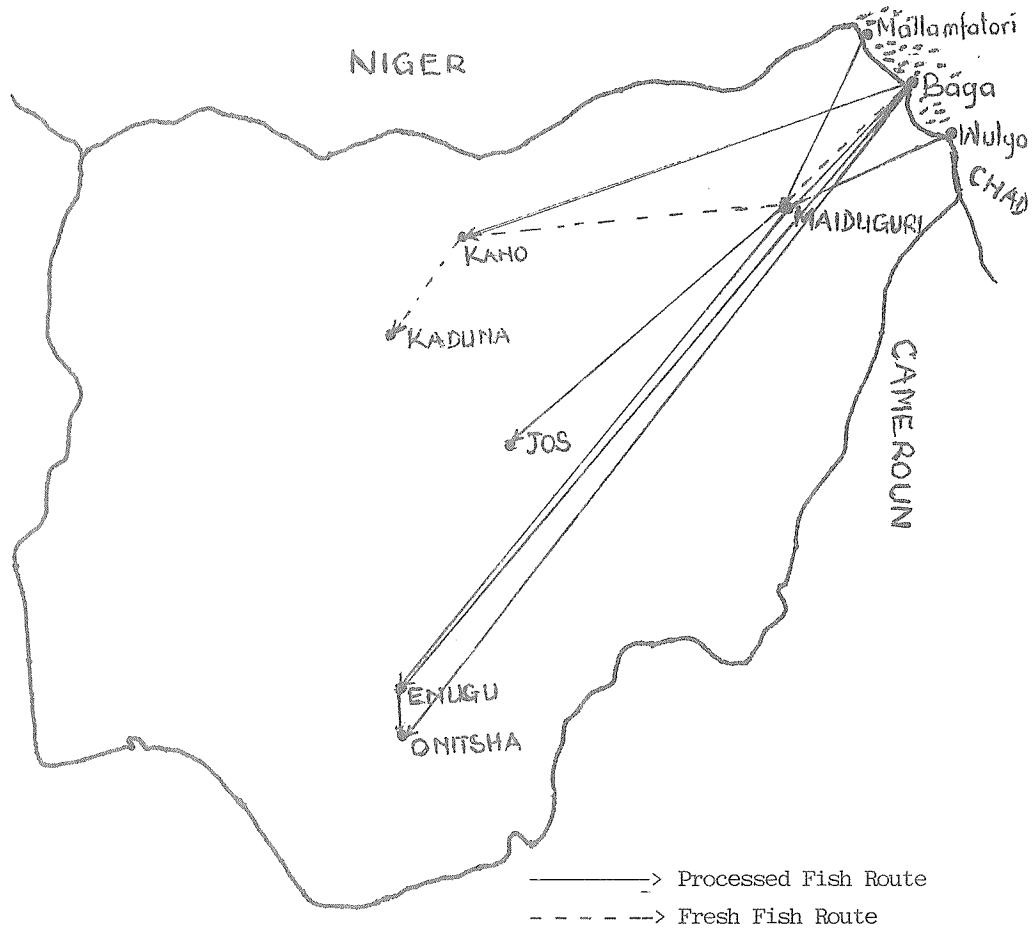
Table 2 - Fish traffic census record, Baga road Maiduguri, 1978

MONTH	FRESH FISH			B.A.N.D.A						O.T.H.E.R		
	Number of Vehicles	Number of Packages	Metric Tonnes	Number of Vehicles	Sacks Number	C Tonnes	Number	Cartons Tonnes	Packets Number	Tonnes	Number of Packages	Metric Tonnes
Total	745	9,176	627.2	2,826	146,869	8,920	121,643	6,301	3,423	166.2	85	49
January	79	716	44.8	277	16,372	1,024	8,864	427	315	17.5	13	0.8
February	80	975	59.4	191	15,102	926	8,321	465	469	25.9	N/A	N/A
March	87	920	63.1	201	16,069	1,029	5,554	264	165	8.3	N/A	N/A
April	80	1,172	80.8	290	22,995	511	18,950	1,001	218	12.3	N/A	N/A
May	58	588	45.5	228	9,185	585	7,593	308	446	83	14	0.7
June	65	1,366	108.2	248	13,869	1,072	14,432	970	140	79	N/A	N/A
July	59	608	39.2	160	7,173	471	2,128	119	88	3.6	10	0.4
August	45	1,162	84.6	217	8,913	617	10,040	698	807	44.0	20	1.4
September	77	690	46.8	244	8,430	497	3,265	154	268	10.5	N/A	N/A
October	28	657	36.4	307	11,924	594	29,701	904	183	12.6	28	1.6
November	21	209	11.7	200	6,156	421	5,198	216	252	10.9		
December	16	112	6.7	266	10,681	491	16,895	775	77	4.4		

Source: - Federal Department of Fisheries

N/A - Not Available

Table 1. THE MAJOR DISTRIBUTION ROUTES OF LAKE CHAD FISH



Note: The marketing channel is such that some of the fish move from the Lake directly to the consumer markets while some fish traders purchase their fish mid-way in the chain. e.g. at Maiduguri or Enugu and transport to their market.