

Aquatic Resources of Cameroon

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Abstract Cameroon is a country in Western Africa with 16 million inhabitants. Located between Nigeria and Equatorial Guinea, the country is bordered by the Bight of Biafra. It has a 402 km long coastline. It covers an area of about 475,440 sq km. Cameroon obtains its fish supply from five distinct sources notably -small scale maritime Fisheries, inland fisheries, industrial fisheries, aquaculture and importation. Despite its enormous potential, Cameroon produces only 180,000 metric tons fish annually. The total artisanal annual catch is estimated to be 55,000 t of which bonga/Sardinella, white shrimp and demersal fish contribute 58%, 27% and 15% respectively. The industrial fleet expanded rapidly during the sixties and by 1973 there were 29 trawlers and 13 shrimpers which landed a total of about 17,600 t of fish and shrimp. The total catch of the industrial fisheries peaked at about 20,400 t in 1976 and since then catches have generally declined. The per capita fish consumption in Cameroon stands at about 17.9 kg per inhabitant per year. This means that the demand of fish in Cameroon stands at about 280,000 tons. There is a deficit of in fish supply for which the government always resort to massive importation of fish products to meet the local demand. The main fish product for export from Cameroon is the prawn (*Panacus duorarum*). The main export market of Cameroon's prawn is the European Union (EU). Between 1998 and 2003, Cameroon's export value has been on the decline, dropping from 1,836 metric tons of prawns for a value of 264 millions USD in 1998 to 51 tonnes, for an estimated value of 315,000 USD in 2003. This drastic drop in exportation is consequential to Cameroon's auto suspension from the exportation of prawns towards the EU as a result of non compliance with EU standards. Today, a good quantity of the catches is being exported illicitly through neighbouring countries.

Key words : Cameroon, total catch, fisheries resources, shrimp

Introduction

Cameroon is located on the west coast of the wet forested Equatorial Africa. It is bordered on the west by Nigeria and the Gulf of Guinea; on the east by Chad and Central African Republic; and on the south by Equatorial Guinea, Gabon and the Republic of Congo. Cameroon has a shape of a triangle, the apex of which is on Lake Chad, about 1,400 km from the southern border with Gabon. Cameroon lies between 9° 30'E and 16°00'E and extends from 2° N to 12° 30'N. Its coastline is about 360 km in length (Fig. 1).

Cameroonian fisheries have undergone considerable development during the last few decades. The industrial

sector has undergone relatively more development than the artisanal sector which is still operating at a subsistence level. The fishery manager is now concerned with appropriate fishing innovations and exploitation of "new" untapped resources, possibly off the slope. It is not clear if greater fishing intensity will result in a significant increase in catch of those dominant species presently exploited by artisanal and industrial "fleets". Attention should be focused on control and adjustment of fishing effort.

Given present-day fishing activities in Cameroonian waters, it is vital to determine the magnitudes of available fishery resources and their potential yields compared to present levels of harvest in order to be able

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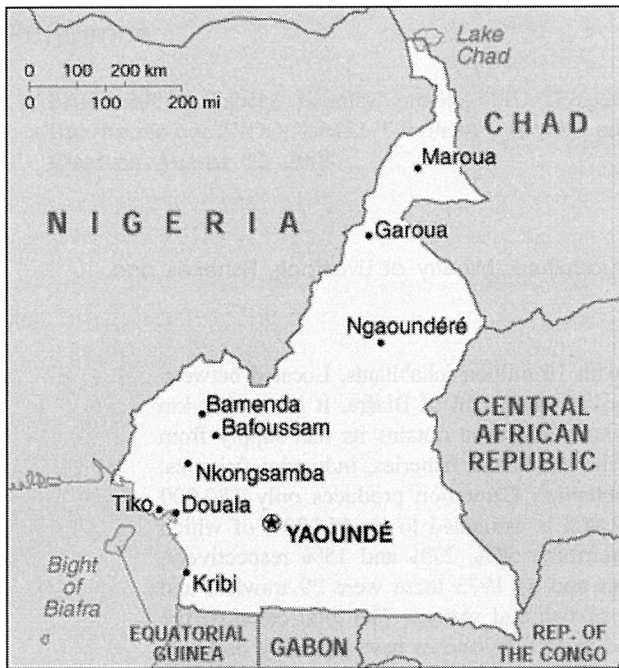


Fig. 1. Map of Cameroon.

to ascertain the long-lasting economic benefits that can accrue from various fishery development activities and management policies. This study thus focuses on the magnitudes of the demersal and pelagic stocks, assesses the species composition of exploitable stocks, compares the productivity and catch rates of artisanal and industrial fisheries, and also describes the interaction between various fisheries. The fisheries sector is very important to the economy of the country as it procures employment for numerous Cameroonians as well as provides a cheaper source of protein for the population. It also contributes to 1.7% of the country's Gross Domestic Product (GDP). The number of people actively implicated is not known as a result of the high mobility of fishermen. But it is projected that some 250 000 people are implicated in fishing and related activities (processing, distribution, transportation, boat building etc.). More than 70% of these persons are of foreign nationals from neighbouring countries such as Nigeria, Benin, Togo, and Ghana. The future of the Cameroon fisheries industries is not very bright since much has to be done to reverse the tendency by continuously involving Cameroon nationals in this sector.

Fisheries resources

Cameroon obtains its fish supply from five distinct sources notably -small scale maritime fisheries, inland

fisheries, industrial fisheries, aquaculture and importation. Despite its enormous potential, Cameroon produces only 180,000 metric tons fish annually divided as follows -95,000 tons from small scale maritime fisheries; 75,000 tons from inland fisheries; 7,500 tons from industrial fisheries; and 5,000 tons from aquaculture (Fig. 2).

Marine fisheries

The marine fisheries are divided into two major sectors:

- The artisanal fishery operating in the creeks, estuaries and shallow inshore waters within a depth of 25 m and above the thermocline, an area dominated by "white fish" (mostly Clupeidae and Carangidae).
- The industrial fishery (trawlers/shrimpers) supposedly exploiting the deeper waters beyond the 25 m depth contour, that is beyond the thermocline, an area dominated by red fish (mostly demersal fish) but where some white fish also extend.

Artisanal fishery

Artisanal fishing units (fleets) operate mostly within a distance of ca 3.2 km (2.1 mi) from the shoreline [2]. The artisanal fishery was sampled in 1983 using the five administrative regions (Ndian, Fako, Wouri, Sanaga and Ocean) as a basis. The structure of the artisanal fishery along the coast is shown in Table 1.

The immigrant fishermen come mainly from Nigeria, Ghana and Benin. The predominance of artisanal fishermen from neighbouring countries could be a major constraint in the development and rational management of

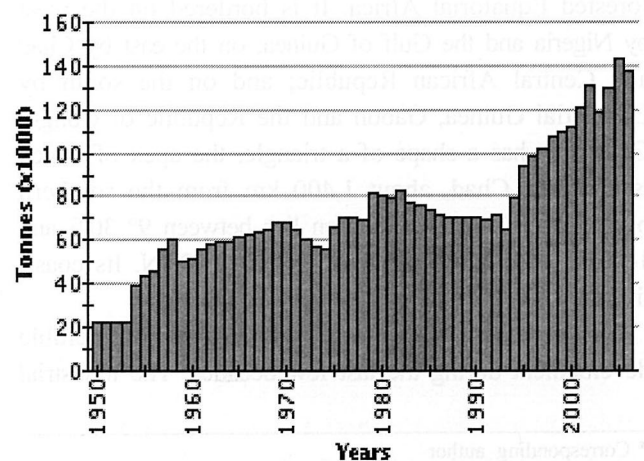


Fig. 2. Cameroon fish production [3].

Table 1. Structure of the artisanal fishery

(i)	number of main fishing villages	57
(ii)	number of canoes	6,011
(iii)	range of canoe length	4-17 m
(iv)	non-motorized canoes	67%
(v)	motorized canoes	33%
(vi)	total number of fishermen	18 625
(vii)	contribution of indigenous fishermen	ca 10%
(viii)	contribution of immigrant fishermen	ca 90%

artisanal fishery sector. The artisanal fishery mainly exploits pelagic fish using small meshed monofilament gillnets to catch bonga and Sardinella. The artisanal fishery also exploits some demersal resources (croakers and threadfins) using set gillnets and utilizing ngoto to catch the “white shrimp” (*Palaemon hastatus*). Artisanal fishery is mainly directed at the coastal pelagic species and the demersal resources represent only 20-30% of landings from the artisanal sector. The artisanal pelagic fisheries are more intensive north of Sanaga River, particularly in the coastal sector between Rio del Rey and the Cameroon River estuary.

The Cameroonian coastline is dotted with many fishing villages of variable size depending on the number of fishing units. Most of the fishing villages or fish landing sites are located near the coastal fishing grounds. Available fishery data indicate a predominance of fishing villages in the northern coastal sector of Cameroon. This is not surprising, given the hydrographic and topographic factors which favour greater productivity of white shrimp, croakers, threadfins, catfish, bonga and sardine in this area.

The main fishing grounds presently exploited by artisanal fishermen are more or less delimited by the upper limit of the thermocline, corresponding to 25-30 m depth contour. The locations of fishing grounds for the artisanal and industrial fisheries are shown in Fig. 3.

Industrial fishery

The demersal fish and shrimp resources have been exploited by industrial fleets since 1951 [4,5]. The traditional fishing grounds for finfish trawlers are ideally supposed to be at least 3.2 km off the estuaries in the coastal sector between Rivers Bibundi and Sanaga and possibly outside the 20 m depth frequented by the canoe fishermen. Unfortunately, available data indicate that

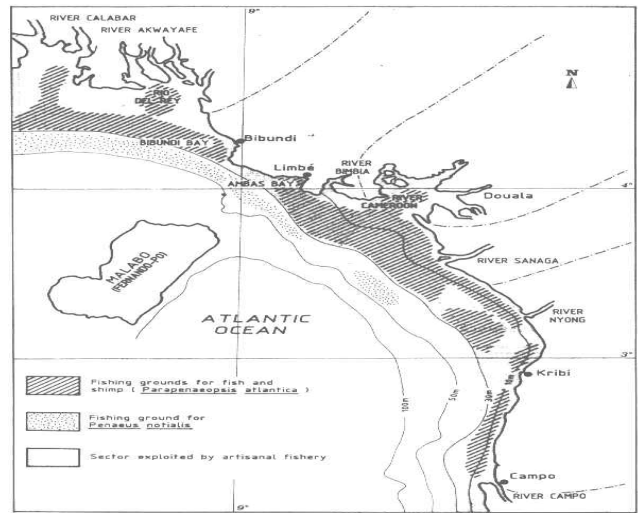


Fig. 3. The location of fishing grounds for both artisanal and industrial fisheries of Cameroon based on Njock (1985a) [7].

finfish trawlers concentrate their fishing activities in the coastal sector between 6 and 25 m. There is a need for regulation of fishing activities in this coastal sector (0-25 m) to control the conflict between artisanal and industrial fishing units sharing fishing grounds shown in Fig. 3.

The shrimpers which exploit the pink shrimp (*Penaeus notialis*) mainly operate in the coastal sector between the Rivers Cameroon and New Calabar. Sometimes the shrimpers operate off the Sanaga River. The pink shrimp is more available to the shrimpers at a depth of 30-60 m whereas in neighbouring Nigeria, *Penaeus notialis* can be fished in much more inshore waters. This could be attributed to the presence of considerably much less saline waters off the estuaries of River Rio del Rey and Cameroon. The Guinea shrimp (*Parapenaeopsis atlantica*) is sought in the shallower coastal sector of 10-30 m depth. The main fishing ground for *Parapenaeopsis* is located between Sanaga River and Ambas Bay.

Inland fisheries

Aquaculture

Cameroon has dense hydrographic network which can conveniently support aquaculture development. In the past Cameroon had benefited from the services of American Peace Corp Volunteers who helped in promoting aquaculture in rural areas. Today aquaculture is carried out at subsistence level, employing mostly family labour. There are however plans by the Government

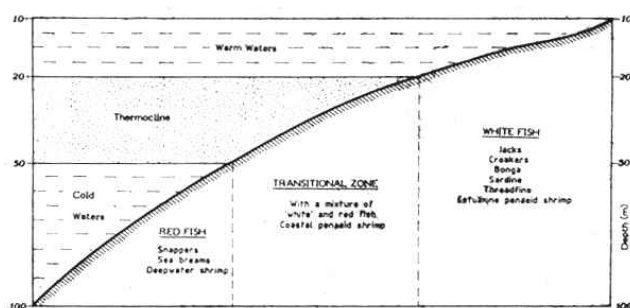


Fig. 4. Diagrammatic representation of fish community distribution on the continental shelf, based on Crosnier (1964) [1].

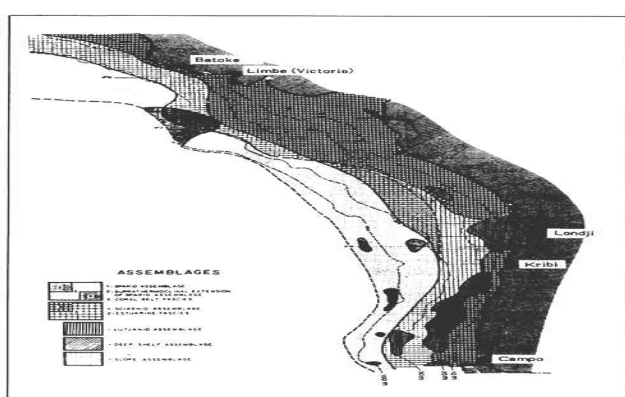


Fig. 5. The distribution patterns of species assemblages on the continental shelf of Cameroon, based on Villegas and Garcia (1983) [10].

to promote commercial aquaculture as means of reducing the dependence on captured fisheries and importations. The main problem hindering the take off of the aquaculture sector is the low investment incentive as many banks are reluctant to provide loans to fish farmers.

Major exploited fish species

There is a definite pattern in the distribution of fishes on the Cameroonian continental shelf. The original description of the distribution of demersal fishes by [6] is fairly valid. The distribution of exploited fish communities on the Cameroonian shelf is illustrated in Fig.

4 and 5.

The following fish communities are exploited by both artisanal and industrial fishing fleets:

- The coastal sciaenid community (on soft deposit) this community presents a particular estuarine facies very close inshore and in the creeks.
- The shallow water sparid community (on more sandy, corally and rocky substrates) in the southern sector of Cameroon.

Potential resources and present state of exploited species

Catch profile

Available catch data indicate fluctuations in shrimp catches. In 1970, the shrimp catch was about 940 t, but by 1972 the shrimp landings had risen to 2,360 t. This was followed by a sudden drop to 1,696 t in 1975 and a sharp rise to 2,438 t in 1977. There has been a gradual decline in the shrimp catch of shrimpers/trawlers since 1977. Catch data on the artisanal fisheries are not yet adequate, but fishery administrators and research scientists are making great efforts to improve the supply of information on the artisanal sector. The first attempt to establish a data base on artisanal fisheries was undertaken in 1978. On the basis of this work SCET-International made the preliminary estimates are given in Table 2.

Development and management issues facing the fishing industry

Cameroonian fisheries have been undergone considerable development since 1980. The industrial sector has undergone relatively more development than the artisanal sector which is still operating at a low commercial level. In light of this, the Government has, in the Fifth Development Plans [9] outlined objectives for the fishery sector:

At the national level, the government has put in place a national plan for reduction of poverty. The fisheries

Table 2. Total artisanal catches of shrimp and fin fishes [8]

Catch	Production
- Total artisanal catch	55,000 t
- Catch of white shrimp (Palaemon)	15,000 t
- Catch of coast pelagics (bonga/ Sardinella)	32,000 t
- Catch of mixed demersal fish (mostly croakers)	8,000 t

sector is concerned with four main goals which include:

- The modernization of the production tool;
- The improvement of the institutional framework;
- The improvement of the incentive framework;
- The sustainable management of natural resources.

To achieve these objectives, Government has benefited from numerous programs and projects from bilateral and multilateral cooperation. These include:

- The Sustainable Fisheries Livelihood Program of the FAO;
- Strengthening the Sanitary Condition of Fisheries Products of the EU, UK and the Dutch Government;
- The construction of the Community Fisheries Centre in Kribi financed by the Japanese Government through the Japan's International Cooperation Agency (JICA);
- The Small Scale Fisheries Support program by the Highly Indebted Poor Country Initiative Fund (HIPC);
- The Post Harvest Loss Reduction Project of HIPC etc.

Government policy for marine sector

Cameroon has a maritime coastline of about 403 km and a continental plateau covering a total surface area of 13,062 km². Its Exclusive Economic Zone covers a total area of 25,000 km². Maritime fisheries accounts for a total production of 95,000 metric tons per year. The 3,000 km² that constitutes the mangrove around the Rio Del Rey and the Wouri estuary represents the spawning ground for many species. Cameroon has ratified many international conventions including the law of the sea and the Code of Conduct for Responsible Fisheries. These international conventions coupled with national regulations form the fundamental basis for Cameroon's Maritime policy. In terms of bilateral agreements, Cameroon has fishing agreements with many African Countries including Senegal, Nigeria, Mauritania etc.

Fisheries license system

Industrial fishing activities in Cameroon is carried out by Cameroonians and foreign Nationals who have obtained a fishing Agreement From the Prime Minister

Head of Government. This agreement gives the right to license your vessels. The conditions for obtaining a license include;

- An Agreement;
- Matriculation number of the vessel + Navigation certificate;
- The tonnage, the crew, types and quantity of fishing gears;
- Types of fish to be caught; etc.

Training

Cameroon has three schools placed under the Ministry of Livestock, Fisheries and Animal Industries, that train Fisheries and Aquaculture Technicians. Recently, the University of Douala opened a new Department of Fisheries and Marine Technology which will henceforth offer Graduate and Post graduate programs in this domain.

Legal frame work

The fisheries sector is governed by law N° 94/01 of 20 January 1994 defining the mode of management of Wildlife, Forestry and Fisheries and its decree of application.

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