Small Scale Fisheries in Africa:
Demographic Dynamics and Local Resource Management

BIOPHYSICAL STUDY OF MARINE AND FISHERY RESOURCES AT MOREE, GHANA

By

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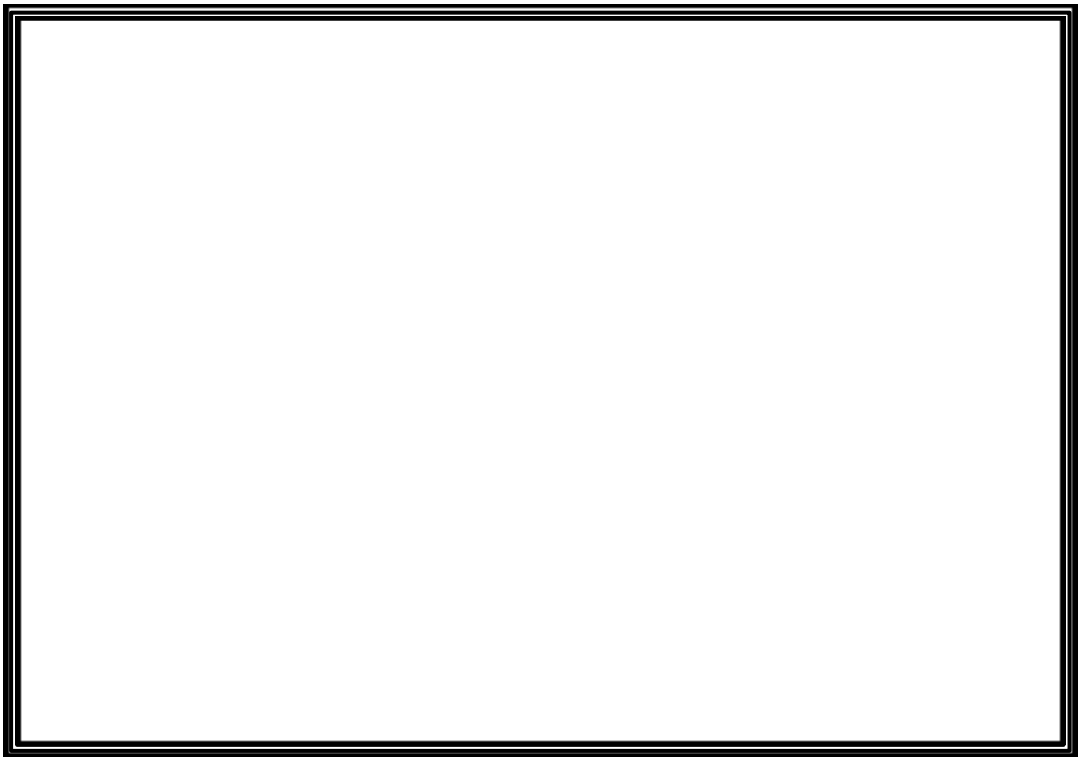

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EXECUTIVE SUMMARY

A fishery resource profile for Moree has been developed to help in exploring linkages between migration dynamics and the organisation and management of fishery activities in the study community. The biophysical study component of the Small Scale Fisheries in Africa project involves the following:

(a) an assessment of the quality and quantity of fish and marine resources available to the community including best estimates of current fish stocks and natural patterns affecting their availability,
(b) a review of the main types of fishing technologies used to exploit fish stocks in the community,
(c) any significant qualitative and quantitative changes in fish stocks which have been documented in recent years, and
(d) an assessment of the main biological and anthropogenic parameters influencing fish stocks and marine resources.

In this report, an assessment of the state of fishery resources in the Moree area is given using data and information collected in fishery resource surveys conducted in Ghanaian waters. Changes in availability of fish as determined from landings at the beaches in Moree are examined and mobility of fishers and canoes is followed from data collected weekly at the landing centres.

Moree is a typical coastal fishing town located about 6 km east of Cape Coast, the administrative capital of the Central Region of Ghana. It is very crowded town without any motorable streets and the several alleys are obstructed by smoking ovens and other physical structures. Drainage at Moree is very poor. There are eight fish landing centres at Moree including Asekyerebedzi (located about 1.5 km east of the Moree town) and where settler fishers operate beach seines. The coastal area is generally rocky and some of the landing centres are at the foot of a prominent cliff overlooking the sea. In spite of its rocky nature, erosion appears to be a problem in some parts of the coast and to check this, the inhabitants of Moree are allowed to dump refuse at designated sections of the beach.

Fishing is the most important occupation for the inhabitants of Moree and women of the town engage in fish processing, distribution and marketing. Fishing gears used by fishers at Moree include a wide variety of gilling and entangling nets, seine nets and handlines. The fishing craft is the dugout canoe which is locally made. The canoe is carved out of a single log of a soft species of wood *Triplochiton scleroxylon* known in Ghana as the "wawa" tree.

The seasonal coastal upwelling of cold, nutrient rich, subthermocline waters drives the biology of the shelf waters in the western Gulf of Guinea (i.e. the area between Côte d'Ivoire and the Republic of Benin in West Africa). Stock assessment surveys conducted by both national and foreign institutions in continental shelf waters off Ghana show significant changes in the distribution and abundance of a number of fish species. The substantial recovery of the stock of *Sardinella aurita* in the mid- to late 1980s following a collapse in the early 1970s was not sustained. Other significant changes are increases in the abundance of triggerfish *Balistes capriscus*, cuttlefish (*Sepia officinalis*) and globefish (*Lagocephalus laevigatus*). *B. capriscus* became the most abundant species in the 1980s but its biomass has reduced significantly since about 1988. These changes have been attributed to a combination of factors including environmental perturbations and increasing fishing effort.

Results of two surveys conducted by the UNIDO/GEF Gulf of Guinea LME Project and FAO/NORAD in the area in the course of this study are summarised in this report. In the first survey (February/March, 1999), thirty-five species were encountered at the five stations close to Moree. A bivalve (*Chlamys opercularis*, Pectinidae) was caught in large quantities at three of the five stations, especially at 21-30 m depth. This was the first time that this shellfish had been recorded in such large quantities in Ghanaian waters. In the second survey (April/May, 1999) large quantities of the species were encountered in the same areas as recorded in the first survey. Other notable results from the two surveys are the presence of triggerfish (*Balistes capriscus*) among the top twenty species encountered (indicating possible recovery of the stock of this species) and the importance of cuttlefish in the waters off Moree.

Some canoe owners and fish processors make a livelihood by buying the bycatch of industrial trawlers operating in the area. This operation also takes place in Elmina and Sekondi/Takoradi in the Western Region and has been identified as an important source of fish for the communities, especially off the main fishing seasons. Some fish processors also travel to Tema, Elmina and Cape Coast to buy frozen fish and bring it back to Moree to be smoked.

Weekly canoe censuses on Tuesday (which is the mandatory non-fishing day at Moree) showed that set net is the most important fishing gear at Abokum Ano, Bofo Mpoano, Bentsir and Enfa Ano whereas Etuei, Cotonou and Apese are important for 'ali'. Beach seines are operated only at Asekyerebedzi. The number of fishers at Moree at any particular time depends on the number of particular types of canoes, especially those for 'ali' fishing. During the study, the number of fishers at Moree varied between about 1,000 in July and nearly 9,000 in May, 1999. The population of the Moree township is given as about 15,000 fishers could constitute about 50 percent of the town's population.

The sociological aspect of migration was investigated within the social science component of this project, however, the general motivation for migration in the artisanal sector in Ghana also apply to Moree. This includes the desire to catch more fish and to save. The types of gears (especially as regards the mesh size) that the fishers take with them on migration sometimes are the source of conflicts between the migrant fishers and their hosts. There have been instances in the past where Ghanaian fishers who had deployed 'watsa' and beach seine nets in some lagoons in Côte d'Ivoire had been brutally assaulted by the host fishers or their gears were confiscated and destroyed by the Ivorian authorities.

The monthly landings by each of the principal gears in the Moree area, namely APW (mainly 'ali'), set nets and beach seines have been estimated. The empty spaces in the tables of landings indicate periods of inactivity or no fish landings by operators of the particular gear. It is evident from table 11.1, for example, that the APW gears were not operated in November and December 1998 and in February-April and June 1999. Consequently, there was large inter-annual variation in landings with highest landing (about 1260 tonnes) in January 1999 and lowest (les than 9 tonnes) in November 1998. The average over the period was about 280 tonnes per month. The flat sardinella (*Sardinella maderensis*) constituted over 60 % of the landings. Landings over the study period were rather low compared with the preceding 10 years. However, the total landed catch (of about 3,600 tonnes) for the study period fits in well with the declining catches at Moree since 1994. This is the same situation at the national level where landings have also declined since the mid 1990s.

In the past, management of fisheries in Ghana was linked to traditional beliefs and practices. In spite of the changing nature of marine fisheries and the society as a whole,

some of these practices are still adhered to in traditional fishing communities. Presently, formal management of fisheries in Ghana is the responsibility of the Fisheries Directorate (of the Ministry of Food and Agriculture) in accordance with the Fisheries Law of 1991 (i.e. PNDCL 256). With the commencement of the World Bank-assisted Fisheries Sub-sector Capacity Building Project (FSCBP) in Ghana, work has been done on policy and regulatory framework for fisheries in Ghana. Significant among these are:

i. completion of a new Fisheries Policy for Ghana;
ii. the preparation of a Demersal Fishery Management Plan (FMP); and
iii. the passing of byelaws by a number of District Assemblies to legalise and operationalise the Community-Based Fisheries Management Committees formed under the project.

The Bye laws passed by the Abura-Asebu-Kwamankese District Assembly on 16th December, 1999, cover several aspects connected with fishing, protection of fishery resources, the conduct of fisheries activities at the landing centres and general sanitation. Provisions have also been made for conflict resolution and the safety of lives at sea. To ensure conservation of resources, the byelaws prohibit the use of dynamite and other explosives in fishing as well as the use of other illegal fishing gears.

The FMP is yet (May, 2000) to be operationalised but contains provisions that would have impact on the fishing community at Moree. For example, it has been proposed that the beach seine fishery throughout Ghana be abolished. If this proposal is carried through then the fishing community at Asekyerebedzi (Moree) will probably cease to function as it is built around the beach seine fishery.

It is important to note that the mesh size of most of the artisanal gears in use at Moree (and Ghana generally) are illegal according to the country's fisheries laws and regulations (PNDCL 256). This is a matter of great concern in Ghana at present as well as the use of other illegal methods like dynamite. Through the CBFMC, the fishers at Moree have voluntarily sworn an oath to desist from the use of dynamite in fishing. Although the Fisheries Law is silent on the use of monofilament nets in marine waters in Ghana, the deliberations and reports of the Fisheries Management and Operations Committee set up under the FSCBP point to the prohibition of such nets in marine waters or recommendation of a minimum mesh of 75mm as is the case for fisheries in inland water bodies. If such mesh size is adopted, then the operations of the 'libias' set net having a mesh size of 31mm and which has become one of the most important fishing gears at Moree, will be disrupted. On a more positive note, closed seasons (especially for trawlers) and extension of the Inshore Exclusion Zone (IEZ) where trawling is not allowed (from the present 30 m depth contour to 12 nautical miles from shoreline) are also being considered. This implies that the artisanal fishers would have more area to operate without competition from industrial fishers.

With a large scale smoking activities, one would expect that sanitation at Moree would be influenced or affected by these activities. It turns out that dumping of fish offal anywhere in town is not permitted except at the beach where the offal is expected to be washed away by the tide and waves. Smoking activities require large quantities of firewood, especially in the traditional oven. It became clear from this study that all the wood used in the fish smoking industry at Moree comes from hinterland. Apparently, it is not permitted to cut wood around Moree and surrounding areas for fish smoking. Harvesting of mangroves for fuelwood is common practice in coastal Ghana and this has contributed to deforestation in many of the areas. The Enfa and Apa lagoons have also lost a sizeable proportion of their mangrove cover.