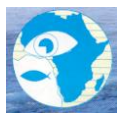


ANNUAL REPORT -MFRD 2012

COST CENTRE: 030 –
FISHERIES DEPARTMENT - RESEARCH

Marine Fisheries Research Division
Directorate of Fisheries, Tema.



MFRD



REPUBLIC OF GHANA

ANNUAL REPORT– JANUARY-DECEMBER 2012

1.0. Introduction

The main function of the Marine Fisheries Research Division (MFRD) is to provide scientific data and information for the management of marine fisheries in Ghana. To carry out its mandate, MFRD undertakes research into, and monitoring of, the marine environment, fish and fisheries, production levels (statistics) and also exploitation of resources by various fishing techniques.

During the year 2012, MFRD received limited funding from GOG to undertake some of her activities. This report is on the planned activities, activities undertaken during the period, outputs and constraints.

2.0 Planned Activities

The planned activities for year 2012 are presented:

- Undertake twelve (12) visits to coastal Regions to collect oceanographic data and samples
- Analyse water samples and process environmental data;
- Conduct a plankton survey in conjunction with Ghana Inshore Fisheries Association (GIFA);
- Undertake monthly visits to Regional Fisheries offices and coastal stations to retrieve outstanding fish catch records;
- Estimate actual fish production for 2011 and projections for 2012;
- Conduct sample surveys of small pelagic and demersal fish species;
- Conduct a Canoe Frame Survey;
- Refresher course in fisheries statistical data collection for technical Assistants;
- Conduct observer programmes on tuna surface fleets and deep sea trawlers;

3.0 Activities Undertaken

3.1 Visits to Collect Fisheries and Oceanographic Data and Samples from Coastal Regions and Districts

Only two (2) visits was undertaken during the year 2012 from the Division to 7 oceanographic stations namely Keta, Winneba, Elmina, Takoradi, Cape-Three-Points, Axim and Half Assini.

3.2 Analyse Seawater Samples and Process Environmental Data

Analysis of seawater samples collected from the coastal stations were analysed for salinity. Sea surface temperature and salinity have been fully analysed summarised for Tema for January – December 2012.

3.3 Undertake monthly visits to District and Regional Fisheries offices to retrieve outstanding fish catch records;

A team of scientists from the Division visited the offices of the Fisheries Department in Keta, Winneba, Cape Coast, Takoradi, Axim, and Half Assini to interact with officers and retrieve fish catch data for some outstanding months the year 2012. Data from Volta region was rather limited due to the low manpower strength in that region. Replacement of staff especially for the Volta, Central and Western regions were discussed during the visits. It was realised that most field technical officers were on the verge of going on retirement hence the urgent need to start recruiting and training young ones. Letters to this effect have been written and forwarded to the Head Office from the regional offices.

3.4 Estimate marine fish production for 2011

The Division collected and processed fish catch returns from the artisanal, Inshore and tuna fleet for 2011. Summaries for 2011 have been produced and compared with the past 2 years. Provisional estimates for 2012 have been provided based on statistical moving averages in preceding 3 years.

3.5 Conduct observer programmes on tuna surface fleets and deep sea trawlers;

A series of observer programme on tuna purse-seiners were carried out between the months of January –December 2012. 11 observers from the Division were deployed on Purse seine vessels during the period to monitor their activities among others in line with recommendations from ICCAT (International Commission for the Conservation of Atlantic Tunas).

3.6 Beach seine project

As part of the FAO-Nansen project on the beach seine fishery in the sub-region, an ecological risk assessment was conducted and also a management plan proposed in 2012. Members of the national task group were involved in the studies and various stakeholders participated.

3.7 ODINAFRICA PROJECT-Formation of National atlas.

ODINAFRICA is Ocean Data & Information Network in Africa. The ODINAFRICA Project is an IODE Programme being facilitated by IOC/UNESCO and sponsored by the Government of the Flanders –

Belgium with project office in Ostend, Belgium. There are 27 African Coastal States, involving more than 40 marine related institutions participating in the project.

The fourth phase of the ODINAFRICA project for Africa depicting the uses of ocean data information systems for managing coastal environments was inaugurated with emphasis on the formation of the marine atlas. Members from collaborating institutes in Ghana completed their proposal for the atlas book and this was submitted to the Regional Co-ordinator in Belgium. The proposed atlas would chapters on Basemaps, Geosphere, Atmosphere, Hydrosphere, Biosphere and Human environment.

4.0 OUTPUTS

The following outputs were obtained during the period under review:

4.1 Status of Ghanaian Marine Environment

Changes in the marine environmental conditions seriously affect fish production (abundance/catch). Parameters mostly monitored are Temperature, Salinity, oxygen, and Plankton, however in the absence of a research vessel only temperature and salinity were monitored in 2012.

4.1.1 Status of the Marine Environment as at 2012

Variations in temperature and salinity affect fisheries production and the small pelagics mostly. Collection of temperature data and salinity water samples for analysis was been carried out successfully in 2012 for Tema.

Table 1 and Figures 1 and 2 depict the seasonal and annual variations in temperature and salinity for Tema for the period 2011 and 2012.

Table 1

	2011	2012
Temperature	26.3 ⁰ C	26.1 ⁰ C
Salinity	33.8‰	33.3‰

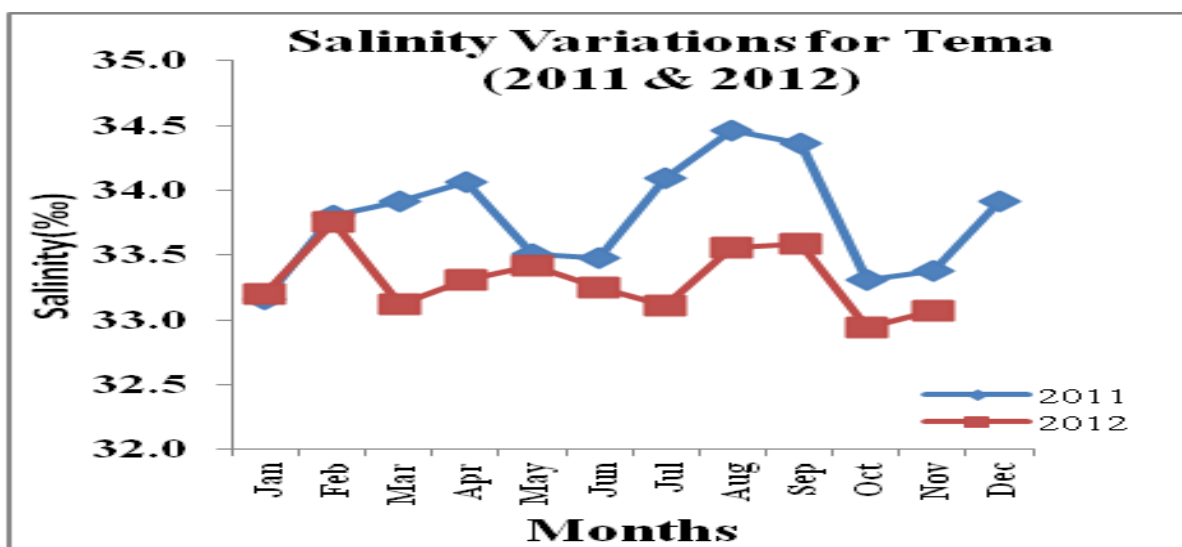
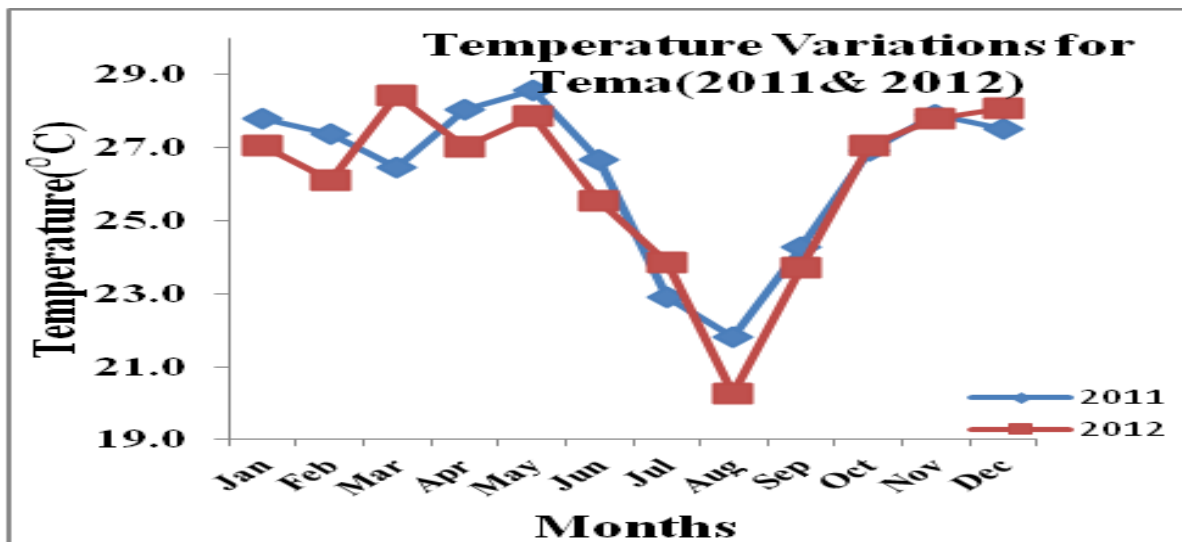


Fig.1

fig.2

The average temperature values for 2011 and 2012 are 26.3°C. and 26.1°C respectively. Salinity for the same period were 33.8 and 33.3 respectively. The year 2012 seemed a bit colder than 2011. Upwelling index, which measures the intensity and duration of the upwelling are 21.3 and 24.2 for 2011 and 2012 respectively (fig.3). Since fisheries productivity are apparently sustained by good upwelling indices greater than 15 in the Ghanaian coastal waters, fish production should be high in 2012 than 2011 especially for the sardinellas. However the production of sardinellas and other major species seems not to be in abundance as compared to the year 2011.

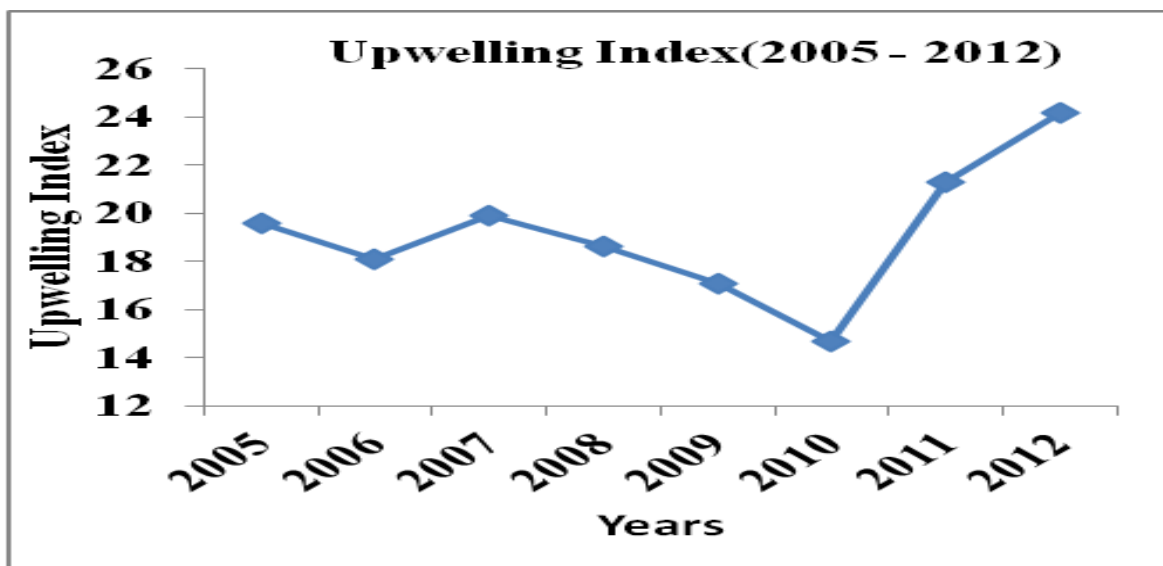


Fig.2

4.2 Undertake monthly visits to District and Regional Fisheries offices to retrieve outstanding fish catch records;

Two visits to all coastal stations were carried out and catch returns were collected for onward processing at the laboratory.

4.3 Estimated fish production for 2012

The Marine Fisheries Research Division estimated fish production for the year 2012. Catches estimates for 2009 and 2010 were compared with that of 2012 and there seems to be a general decline over the past 3 years due to a myriad of causes both natural and man-made. The unfavourable climatic conditions prevailing over the past years with the rise in sea-surface temperatures (as a result of global warming) has indirectly affected fish production. Coupled with changes in the environment, the use of unorthodox methods of fishing leading to excessive pressure on stocks have also led to the decline of fish stocks.

Upwelling index calculated in 2012 was higher than 2011 indicating a higher index tending to lead to higher productivity but however caution should be taken as these factors may not in totality depict biological productivity of our coastal waters. Unexpected interactions in the environment may disrupt species above or below the food chain and further human interactions (open access; overcapacity; use of illegal nets; use of light attractants) are all possible causes of any decline in stock levels.

Table 2 below shows comparison marine fish production from 2009-2011 (mt) *Estimates for 2012 are shown

Fleet/Year	2008	2009	2010	2011	*2012 estimates
Artisanal	254,133	226,755	203,000	210,600	213,452
Inshore	6,140	12,048	9,823	9,576	10,482
Industrial	19,594	20,837	18,856	19,597	19,763
Tuna	64,000	66,470	77,876	86,772	90,000
Total	343,867	326,110	309,555	326,545	333,697

From the above table there is seen slight changes in landings from all fleet from year to year and that no real significance exist in landings (P value (8.13E-12) <Critical P at 5% confidence interval) with approximately 2% increment in 2012 production levels estimated over the year 2011.

Increases are moderately reflected in the artisanal and inshore fishery but there seems more potential for expansion in the tuna industry.

4.4 Conduct observer programmes on tuna surface fleets

Observer programmes on board eleven (11) tuna purse-seiners were undertaken by staff of the Research Division. Each trip lasted approximately 40 days. Scientific officers were deployed on the vessels to among others:

- observe/monitor fishing activities of the vessel;
- obtain set by set the catch and species composition of catch noting collaborative fishing strategies etc.
- ensure effective and accurate entry of the logbook by officers onboard fishing vessels.

All these were to ascertain compliance with ICCAT rules and regulations for the sustenance of the fishery. In general Ghanaian tuna fishing vessels operate within the tropical Atlantic Ocean using Fish aggregating devices (FADS) with radio buoys and collaborating with other Ghanaian registered boats often sharing their catches. The Skipjack tuna formed the major part of the target catch with about 70 percent of total catch; Yellowfin was about 15 – 20 percent whilst the Bigeye was just about 5 percent of total target catch. By-catch formed about 5 to 10 percent of total landings and they included the Sailors dolphin fish

and Wahoo. Sea turtles and sharks were never brought on board; they were released from the nets before the catch was brought on deck or were quickly thrown overboard.

In conclusion, it is suggested that the placement of observers onboard all purse-seiners throughout the year should continue to closely monitor activities of vessels especially fishing practices which tend to capture a lot of juvenile tunas species.

4.5 Beach seine output

The management of Beach seining in Ghana is mainly managed traditionally by local communities through taboos and customs. As a result of the destructive nature of beach seine, the banning of its activities throughout Ghana was adopted as a policy in the Fisheries Management Plan (FMP) of year 2000, produced under the Fisheries Sector Capacity Building Project (FSCBP) but is yet to be enforced. The non enforcement is apparently due to the serious implications of this policy on the socio-economic well-being of the beach seine stakeholders along the value chain, their dependents and nation as a whole. This project has come up with more issues, be it technical, social, environmental, financial and institutional highlighting basically on the ecosystem well being where the people and the environment must be at harmony. Interactions with fisher-folks and other key stakeholders in the industry have proven the need for an area-time closed season to protect juvenile fish species and spawning grounds whilst enforcement of mesh regulations is enhanced. People indiscriminately dumping waste especially plastics should be punished severely. Other alternatives such as cage culturing of fish and rearing of ruminants during closed seasons would also help to reduce the over dependence on the marine resources for their livelihoods and thus also improve upon their incomes and general well being. Empower the youth through formal education to acquire other professions and vocations to enable them operate in other areas of the economy to reduce the pressure on the Fishing Industry.

4.6 ODINAFRICA Project

The current phase of the project ODINAFRICA IV focuses on producing a Coastal and Marine Atlas for the country. The Atlas is a collection of digital maps and datasets with supplementary tables, illustrations and information that systematically illustrate the coast, oftentimes with cartographic and decision support tools.

Thematic areas were developed under the following: Atmosphere, Basemap, Biosphere, Geosphere, Human Environment and Hydrosphere. Images and data set have been uploaded unto the programmes website and progress work is ongoing..

Coastal issues have been a cause for concern in Ghana and it is of the view that once an atlas is developed for the country, managing these issues will be much easier for resources managers, policy makers, universities, planners, developers and the general public.

Ghana for now has the ongoing coastal and marine atlas hosted by the IODE on the web at www.africamarineatlas.org. After the completion of the atlas Ghana will host and managed its own web page with datasets and layers being upgraded periodically. MFRD is responsible for hosting the ODINAFRICA IV in Ghana.

5.0 Activities not undertaken

5.1 Conduct sample surveys of small pelagic and demersal fish species. Due to lack of adequate funding, this activity could not be carried out.

5.2 Conduct a Canoe Frame survey.

Frame surveys are essential as the baseline in any Fisheries Catch assessment surveys. The last time a canoe frame survey was conducted was in 2004. Due to lack of available funds, this major activity which is overdue could not be carried out.

5.3 Refresher course in fisheries statistical data collection for technical Assistants.

Due to limited funds this activity could not be carried out.

5.4 Plankton studies

Due to lack of funds to hire an inshore vessel on monthly basis, this important activity could not start. The incidence of planktonic organisms (notably copepods) as a food base monitored monthly would have given us an indication of the possible threshold levels which could be correlated to high incidence of small pelagics during the major fishing season.

6.0 Constraints

The following constraints totally mitigated against the smooth running of the Division in the year 2012 and are hereby enumerated:

- Very limited and late release of funds;

- Rampant break down of computers virtually leading to a standstill of work especially processing of catch data from the field;
- Old obsolete biological equipment such as weighing balances;
- Lack of oceanographic equipment such as analytical probes;
- Breakdown of only salinometer in laboratory which is even out-moded;
- Lack of vehicles (2 out of the 3 official vehicles are over 15 years and frequently breakdown. They need to be replaced with immediate effect;

Others are the:

- The slow pace of recruitment of more technical assistants in the field;
- Lack of research vessel;
- The rather slow pace of rehabilitating the Research division since September 2012 leading to a low flow/productivity in the work environment.

7.0 Planned Activities for 2013

The planned activities for 2013 are presented:

- Undertake twelve (12) visits to coastal Regions and Districts to collect oceanographic data and samples
- Analyse water samples and process environmental data;
- Undertake monthly visits to District and Regional Fisheries offices to retrieve outstanding fish catch records;
- Conduct sample surveys of small pelagic and demersal fish species to compare their population structure and some life history parameters using production and analytical tools;
- Conduct a Canoe and Gear Frame Survey and update knowledge on the structure and dynamics of the various fishing fleets as a baseline requisite for planning and management of the fisheries resources;
- Documentation of the various fishing methods (via video);
- Creation of a website for the Division and improvement of library facilities;
- Conduct monthly plankton tows off the Tema Harbour jetty in collaboration with the inshore operators;

- Conduct a Refresher course in fisheries statistical data collection schemes for technical Assistants with the production of field identification sheets of common marine fish fishes caught in Ghana;
- Intensify environmental data collection schemes by provision of multi-parametric handheld probes to coastal data stations in light of exploration of oil of the western shelf and any effects that it might cause to fish resources;

Generally activities for the year 2012 was poor.