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**UNIVERSITY OF  
CAPE COAST**

## **USAID/UCC FISHERIES AND COASTAL MANAGEMENT CAPACITY BUILDING SUPPORT PROJECT**



**YEAR TWO**

**FIRST QUARTER REPORT**

1ST OCTOBER – 31ST DECEMBER, 2015  
DEPARTMENT OF FISHERIES AND AQUATIC SCIENCES  
UNIVERSITY OF CAPE COAST

January

**2016**

## LIST OF ABBREVIATIONS

CCM	Centre for Coastal Management
CSLP	Coastal Sustainable Landscapes Project
CAADP	Comprehensive Africa Agriculture Development Program
CDCS	Country Development Cooperation Strategy
DFAS	Department of Fisheries and Aquatic Sciences
FtF	Feed the Future
FCM	Fisheries and Coastal Management
GIS	Geo-Information Systems
GSSP	Ghana Strategy Support Program
GoG	Government of Ghana
ICM	Integrated Coastal Management
METASIP	Medium Term Agricultural Sector Investment Plan
MDG	Millennium Development Goal
MOFAD	Ministry of Fisheries and Aquaculture Development
MEAS	Modernizing Extension and Advisory Service
METSS	Monitoring, Evaluation and Technical Support Services
UCC	University of Cape Coast
USG	United States Government
WARFP	World Bank West Africa Regional Fisheries Program

This document was prepared for USAID/Ghana under Agreement (PIL No.: 641-A18-FY14-IL#007) awarded on October 24, 2014 to the Department of Fisheries and Aquatic Sciences of the University of Cape Coast entitled; the USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. This document is made possible by the support of the American People through the United States Agency for International Development (USAID). The views and opinions contained in this report are those of UCC/DFAS Project team and are not intended as statements of policy of USAID. As such, the contents of this report are the sole responsibility of the UCC/DFAS Project team and do not necessarily reflect the views of USAID or the United States Government.

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**Citation:**

Department of Fisheries and Aquatic Sciences (2015). *The USAID/UCC Fisheries and Coastal Management Capacity Building Support Project*. First Quarter Report in Year Two, October 1, 2015 – December 31, 2015. University of Cape Coast, Cape Coast, 69 pp.

**Cover Photo:** Mr. Kevin Sharpe (Director of Economic Growth Office, USAID) in a meeting with the Pro-Vice Chancellor of University of Cape Coast, Prof. John Nelson Buah and other USAID/UCC Fisheries and Coastal Management Capacity Building Support Project Board Members from UCC.

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## **EXECUTIVE SUMMARY**

The Fisheries and Coastal Management Capacity Building Support Project was awarded by the United States Agency for International Development (USAID) to the Department of Fisheries and Aquatic Sciences (DFAS) of the University of Cape Coast (UCC) on the 24<sup>th</sup> October 2014. As per the agreement, UCC/DFAS is expected to submit a quarterly progress report to USAID within 30 days after the end of each quarter. This report refers to the period from 1<sup>st</sup> October-31<sup>st</sup> December, 2015. It provides updates on progress made or otherwise in relation to first quarter activities as detailed in the second annual work plan. Key targets met during the period include receipt of first shipment made up of consignments of laboratory research and field equipment. The period also saw the completion of Year 1 Annual Report and the development of Year 2 Work plan that were submitted to USAID and received approval. Also a procurement plan was drafted for further review by UCC's Procurement Office. Several researches within the project's thematic areas were started during the period under review in cooperation with MPhil and PhD students of the Department. Significant achievements were made on the M&E front facilitated through USAID Economic Growth Office, M&E Specialist Working Group and USAID Monitoring and Evaluation Technical Support Services (METSS).

## 1.0 INTRODUCTION

Ghana has valuable marine fisheries resources that contributes 5% to annual national gross domestic product (GDP). The sector indirectly supports the livelihoods of 2.2 million people or 10% of the Ghanaian population. Unfortunately the economic fortunes from these fisheries are being dwindled due to low investment in fisheries management and value addition is not given priority. Illegal fishing is pervasive and there are too many vessels catching few fish leading to cost overruns i.e. cost of fishing exceed the amount of income that is being generated, at least compared to ten years ago. As a result the individuals and communities reliant on fishing are getting poorer. Indeed, the industry presently provides little prospect for improving the welfare of fisher folks with ramifications for the national economy as a whole. The decline is so grave that improving the management of the sector in Ghana to be able to realize the full potential of the industry will however take some time. This will require careful management to ensure impacts on individuals and communities are properly addressed. Based on experience elsewhere it will take 20 or more years to effect such change. Therefore a long term commitment to rebuild marine fisheries stocks and increase production through effective fisheries management strategies and adoption of responsible fishing practices is crucial. To



DFAS and other SBS students of coastal management course on an educational trip at an Oil Waste Processing Facility in the Western Region, Ghana

achieve these goals require well-planned intervention to revitalize Ghana's fisheries sector and is expected to contribute to the Ghana Poverty Reduction Strategy.

The Fisheries and Coastal Management Capacity Building Support Project was born out of this concern. It aims at promoting sustainable

marine fisheries management in Ghana through capacity building of students, professionals and fishing communities using effective partnerships across public and private institutions locally and internationally. In respect of this, the United States Agency for International Development (USAID) committed US\$5.5 million dollars, sub-obligated through a multi-year partnership program with the University of Cape Coast's Department of Fisheries and Aquatic Sciences as lead implementers over five years (2014-2015). The project contributes to the Government of Ghana's national fisheries policies and coastal development objectives, and USAID's Feed the Future Initiative.

### 1.1 Feed the Future Initiative of the United States Government

The Feed the Future Initiative (FTF) was launched in 2010 by the United States government and the Obama Administration to address global hunger and food insecurity. According to the National Institute of Food and Agriculture, it is "the U.S. government's global food security initiative. In 2009 President Barack Obama committed \$3.5 billion over a 3-year period to a global initiative with the intent of combatting hunger and poverty; in May 2010 the United



States Department of State launched and developed the Feed the Future Initiative. The Initiative is coordinated primarily by the U.S. Agency for International Development (USAID). According to USAID FTF website, “Recent studies suggest that every 1 percent increase in agricultural income per capita reduces the number of people living in extreme poverty by between 0.6 and 1.8 percent.” No other investment has that return. FTF is funding initiatives in fisheries and coastal management in view of the fact that the capacity of most developing nations to utilize their coastal and marine assets, while sustainably protecting them from degradation, is lacking.

More so, Ghana is faced with growing challenges in managing coastal and marine resources, such as the dramatic decline of fish stocks and the degradation of coastal resources. The overexploitation of fisheries at artisanal and industrial scales using unsustainable fishing methods, and the pollution of coastal ecosystems, are further concerns. Coastal ecosystems, especially estuaries, lagoons and their associated wetlands, are becoming increasingly impacted by activities within their catchment areas, with deforestation, intensive agriculture, damming and irrigation all changing the nature of material fluxes (water, sediment, nutrients and pesticides). It is apparent that Ghana’s marine and coastal resources are being lost or damaged in ways that are diminishing biodiversity. This is attributed to many factors, including deficiency in monitoring and enforcement of regulations, lack of education, training, research, data gathering and analysis, and low government investments in capacity building for effective management. The lack of adequate human resource capacity, good governance and well-functioning systems impede natural resource management in Ghana.

## **1.2 The USAID Fisheries and Coastal Management Capacity Building Support Project**

The US\$ 5.5 million award by USAID to the University of Cape Coast is aimed at contributing towards addressing capacity deficiency in fisheries and coastal management to a large extent. The USAID Fisheries and Coastal Management Project was modelled to respond to the issues raised in the SWOT Analysis. It aims at resourcing the Department to be able to train personnel for fisheries and coastal management, and strengthen the Centre for Coastal Management to be fully operational. It will also build stronger and more integrated information support systems to manage and streamline existing and new data on fisheries and coastal issues to underpin future evidence-based policy formulation to help inform development strategy decisions at all levels.



Public lecture on the Fisheries & Coastal Management Project at the Academic Board Chamber, University of Cape Coast

It will generate research results to fill key knowledge gaps on a needs basis that would help strengthen the further development and implementation of Ghana's Fisheries and Aquaculture Sector Development Plan. It is expected that implementation issues, such as prioritizing, sequencing, and phasing in of policy reforms will feature prominently; and will embark on community outreach and extension to improve long-term national capacity on fisheries and coastal issues, train personnel in relevant government agencies, and strengthen their links to a network of researchers within national research organizations and elsewhere.

Through this grant, formal partnerships (Memorandum of Understanding) have been strengthened or established with reputable local and international institutions as follows:

- I. ECOWAS Coastal & Marine Resources Management Centre, University of Ghana
- II. Coastal Resources Center - University of Rhode Island, USA
- III. Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia
- IV. Florida Gulf Coast University, USA
- V. Ministry of Fisheries and Aquaculture Development, Ghana.



### **1.3 The Department of Fisheries and Aquatic Sciences of the University of Cape Coast**

The University of Cape Coast (UCC) is located close to the ocean making the Department of Fisheries and Aquatic Sciences (DFAS) one of the leading institutions in the area of Fisheries and Marine Sciences in Ghana. Indeed, the Department since its inception in 2002 has the vision to become unique and an innovative partner in advancing healthy aquatic ecosystems for sustained provision of goods and services, in collaboration with public and private institutions, both local and international.



Some foreign students from Virginia Tech University with DFAS students and lecturers

This vision is beginning to see the light of the day through the USAID multi-year funding to the tune of US\$ 5.5 million. Through this grant, the capacity of the Department to deliver this vision is enhanced through the provision of adequate logistics and teaching infrastructure, increasing student numbers largely due to new knowledge about the capacity of the Department, possible job opportunities, enhanced sensitization about the Department and deepening relationships with related institutions. With this project coming on board, a lot of issues have been largely addressed. The USAID funds has enabled the Centre for Coastal Management effectively take off its operations and received formal institutional recognition.

The Department and the Centre now have a state-of-the-art laboratory with relevant and modern laboratory and field equipment procured and soon to be installed to allow hands-on practical based training of students. The Department offers undergraduate (BSc.) degree in Fisheries and Aquatic Sciences and postgraduate (MPhil and PhD) degrees that expose students to:

- Oceanography, Limnology and Aquatic Ecology
- Integrated Coastal Resource Management including Petroleum Ecology and Climate Change Studies
- Aquaculture, bridging gaps between demand and supply in the fishing industry and aquaculture entrepreneurship
- Fisheries Science including fisheries ecology and organismic interactions.

With the USAID grant, several opportunities exist for DFAS students. For instance:

- i. Funding for undergraduate project work in the final year is guaranteed under the multi-year USAID/UCC Fisheries and Coastal Management Capacity Building Support Project (2014-2019).
- ii. Students could benefit from the J-TERM Student Exchange Program with the University of Rhode Island in the United States of America.
- iii. Graduate and Post-graduate studies - The Department offers MPhil and PhD programs in the fields of Integrated Coastal Zone Management, Aquaculture, Fisheries Science, and Oceanography and Limnology. This presents our undergraduate students with future academic prospects.



Staff and students also benefit from interactive teaching and learning alongside field visits and real-time laboratory exposure for practical experience. It is anticipated that the graduates could engage in research work in Institutions (including CSIR, Water Resources Commission), Ministries (Fisheries and Aquaculture Development; Environment, Science and Technology; Agriculture), Environmental sector, Financial institutions, Oil and Gas industry, NGOs (local and international), Managers of Aquaculture Facilities, Navy, Academia, or become Entrepreneurs among others. The Department strives to communicate with its students and stakeholders through staff blogs, Departmental websites and social interactive platforms such as Facebook. For further information, please see:

<https://dfas.ucc.edu.gh/>  
<https://www.facebook.com/dfas.ucc.edu.gh>

A SWOT analysis conducted by the Departmental Board (2012) as part of Departmental Strategic Planning revealed the following issues:

### 1.3.1 Strengths

- Highly qualified academic staff
- Motivated personnel and students
- Library facilities
- Teamwork
- Suitable location of Department for teaching and research work



Some academic staff (from left to right) Prof. John Blay, Prof. Kobina Yankson, Dr. Noble Asare and Dr. Joseph Aggrey-Fynn

### 1.3.2 Required Strengths

- Visibility of the department (improved content of staff blogs, departmental website, departmental notices, media relations, etc.)
- Expanded income generation base i.e. research grants
- Changed mindsets regarding the name of the Department
- Student selection procedure reviewed
- Harmony among departments in the School
- Equitable utilization of resources at the School level
- Up-to-date field and laboratory equipment acquired
- Modern hatchery facility

- Equipment maintenance culture
- Efficient technical staff
- Enhanced ICT systems
- Acquisition of vehicle/ transport
- Well-maintained and serene environment
- Effective and efficient administrative staff
- Efficient channels of communication between management, staff and students
- Dedicated academic, research and technical staff

### **1.3.3 Challenges**

- Dwindling student numbers
- Poor quality of incoming students
- Financial difficulties
- Limited equipment and poor maintenance culture
- Limited office space for academic staff
- No transport/ vehicle
- Unhealthy competition among departments in the School
- Limited book/ Journal supplies
- Poor teaching and learning facilities
- Inefficient administrative and technical Staff (e.g. poor record keeping, weak supervision, poor working attitude)
- Inadequate space for expansion of laboratory and library facilities
- Misconception regarding the name of the Department
- Negative propaganda by colleagues and students in other departments
- Inability to conduct state-of-the-art research
- Unreliable power (electricity) supply
- Unreliable water supply in the laboratory
- Bureaucratic procurement procedures (quality of items, price of items, speed of purchase, delays in audit inspection process)
- Reluctance of other academic departments to share equipment in the pool
- Weak relationship with sister institutions (e.g. Council for Scientific and Industrial Research, University of Ghana, Kwame Nkrumah University of Science and Technology)
- Poor visibility of department

### **1.3.4 Opportunities**

- Collaborative Projects with donor agencies e.g. USAID, World Bank, Danida, etc
- Establishment of the Centre for Coastal Management for community outreach
- Run short courses for professionals i.e. Fisheries Management, ICM, etc
- Offer consultancies and Short-term technical Assistance to Projects
- Networking opportunities with foreign universities e.g. Coastal Resources Centre, University of Rhode Island, Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong
- Partnership with Private Fish Farms e.g. Ainoo-Ansah Farms

- Collaboration with the Ministry of Fisheries and Aquaculture Development e.g. role of DFAS in National Aquaculture Development Plan

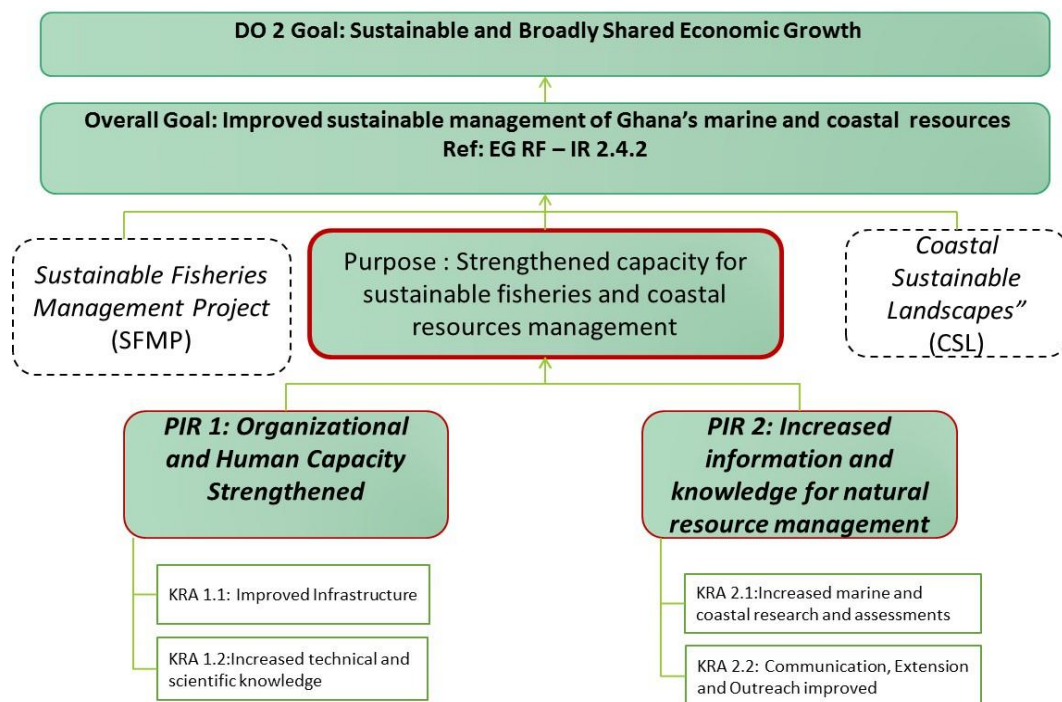
### 1.3.5 Threats

- Dwindling financial support from central administration
- Increased workload
- Non-committed partners

## 2.0 PROGRAM COMPONENTS, MANAGEMENT AND ACTIVITIES IN THE FIRST QUARTER OF YEAR 2

### 2.1 Program Components

The overall objective of the project is to improve the sustainable management of Ghana’s marine and coastal resources on the basis of capacity strengthening. Specifically, USAID’s technical and financial support is designed to strengthen UCC’s capacity in developing and providing quality and relevant education programs, practical research and advisory services that will support the management of fisheries and coastal resources on a sustainable basis to enhance the nation’s social and economic development. This capacity building program is aimed to facilitate individual and organizational learning which builds social capital and trust, develops knowledge, skills and attitudes and when successful creates an organizational culture and a set of capabilities which will enable the university to set objectives, achieve results, solve problems, and create adaptive procedures which enable them to support national development.



**Figure 1: Project overview**

## 2.2 Program management, technical support and collaborations

During the period under review, significant improvements were achieved in the M&E front facilitated through USAID Economic Growth Office M&E Specialist Working Group and USAID Monitoring and Evaluation Technical Support Services (METSS). The meeting took place at Coconut Grove Hotel, Accra in October 2015. The Project M&E Coordinator and the Project M&E Support were in attendance. The meeting brought together all USAID Implementing Partners (IP) M&E teams to discuss the USAID Feed-the-Future Monitoring System (FTFMS) and its reporting procedures and requirements, data collection and how IPs can collectively improve performance management within USAID. The meeting took the form of a training session for participants to familiarize themselves with USAID M&E systems, procedures and reporting requirements and the responsibilities of all IPs.

The methodology and approach for conducting indicator data verification as well as key findings of previous Data Quality Assessments (DQAs) conducted were presented to participants to equip them with skills needed for the collection of good quality data. The online FTFMS, menu and tabs, roles and responsibilities of users as well as setting baseline values for FTF output indicators were introduced to participants. This was followed by a FTFMS practical exercise where participants were given hands-on training on FTFMS including the selection of indicators, entering data and narratives, generating reports and exporting data. Meeting participants were also taught how to develop and implement annual Performance Monitoring to enable them to improve their M&E systems.



USAID AND METSS reviewing project activities to close the first year of the USAID/UCC FCMCBS

In a related development, the project also undertook a second Joint Project Monitoring and Evaluation (M&E) Review with the support of METSS. Indeed, Year One of the FCMCBSP project was mainly dedicated to assembling a team to carry out the mandate of the project, setting up project management structures, improving DFAS and CCM infrastructure and providing laboratory and field equipment. Therefore, not much technical activities and program interventions were planned and executed in the first year. The project was designed such that the actual implementation of program activities would start in full swing from the second year of the project. The project therefore intended to use the beginning of the second year as a baseline against which project performance will be measured.

In view of this, the project management team considered it necessary to review the project's Performance Monitoring Plan (PMP) that was prepared in the first year, review the list of indicators which were selected to measure performance and report to USAID based on the learning and experience gathered since the inception of the project. Project management was of the view that the PMP needed to be reviewed with indicators redefined and reselected to

become more relevant for the project vis-à-vis project activities. With that in mind, project management had a discussion with the USAID to plan a project M&E review meeting with support from USAID Monitoring and Evaluation Technical Support Services (METSS). During the USAID Economic Growth office M&E Specialist Working Group meeting in Accra, Project M&E staff shared that concern with the USAID, METSS and AfricaLead who agreed to support the project set up and improve its M&E system. The project therefore put in an official request to USAID, which was approved and USAID planned for the meeting in December 2015 with participation from METSS. The agenda for the meeting was to review the PMP, selecting indicators, setting baselines and annual targets and reporting to USAID.

The ensuing led to a week-long joint (USAID, METSS and DFAS) meeting at the University of Cape Coast to have an overview of the project and Year One activities that touched on the activities planned and implemented in Year One, performance indicators (project results and linkage to indicators) and knowledge management. There was then a Data Quality Assessment (DQA) session to discuss what the project had done well or had not done well in Year One as far as M&E was concerned to offer an opportunity for learning and improvement in Year Two. The project PMP was then thoroughly reviewed and discussed, dwelling more on the Results Framework to identify its strengths and weaknesses and also how it could be improved to ensure efficiency. Following a review of the PMP, more appropriate indicators for the project were selected with the setting of project baselines and targets for Year Two. There was also a review of the project electronic, online and filing database. It was expected that the project will have a revised M&E Plan to include suggestions made by the M&E review team which has already been produced awaiting comments and approval from the USAID. With a revised project M&E Plan, the project has positioned itself on a better platform to improve its M&E system in Year Two and beyond. Below is a table showing indicators, selected and agreed upon for tracking progress of the FCMCBSP, baselines and targets for FY 2016.

**Table 1:** Selected indicators for tracking progress of the FCMCBSP, baselines and targets for FY 2016

<b>Indicator Number</b>	<b>Title of Indicator</b>	<b>Baselines (set in FY 2015)</b>	<b>Targets (for FY 2016)</b>
1	Quantities and/or sizes of fish landed by selected canoe fishermen in the Central and Western Regions of Ghana	To be determined	To be determined
2	Fishing Mortality at MSY ( $F_{msy}$ )	To be determined	To be determined
3	Biomass to produce MSY ( $B_{msy}$ )	To be determined	To be determined
4	Number of hectares of biological significance and/or natural resources under improved natural resource management as a result of USG assistance	0	To be determined



<b>Indicator Number</b>	<b>Title of Indicator</b>	<b>Baselines (set in FY 2015)</b>	<b>Targets (for FY 2016)</b>
5	Number of hectares in areas of biological significance and/or natural resource showing improved biophysical conditions as a result of USG assistance	0	To be determined
6	Number of training and capacity building activities conducted with USG assistance	0	5
7	Number of people receiving USG supported training in natural resources management and/or biodiversity conservation	0	150
8	Number of person hours of training in natural resources management and/or biodiversity conservation supported by USG assistance	0	400
9	Number of individuals who have received USG supported long-term agricultural sector productivity or food security training	0	35
10	Number of individuals who have received USG supported short-term agricultural sector productivity or food security training	0	280
11	Number of food security private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) receiving USG assistance	0	15
12	Number of private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) that applied new technologies or management practices as a result of USG assistance	0	15
13	Number of members of producer organizations and community based organizations receiving USG assistance	0	200

<b>Indicator Number</b>	<b>Title of Indicator</b>	<b>Baselines (set in FY 2015)</b>	<b>Targets (for FY 2016)</b>
14	Number of farmers and others who have applied new technologies or management practices as a result of USG assistance	0	200
15	Number of rural households benefiting directly from USG interventions	0	200
16	Number of vulnerable households benefiting directly from USG interventions	0	200
17	Score, in percent, of combined key areas of organization capacity amongst USG direct and indirect local implementing partners	To be determined	To be determined
18	Number of beneficiaries receiving improved infrastructure services due to USG assistance	0	96
19	Number of new research collaborations established between USG-supported beneficiaries and other institutions	0	10
20	Number of scientific studies published or conference presentations given as a result of USG assistance for research programs	0	40
21	Number of dialogues and stakeholder consultations held on fisheries and coastal management	0	13
22	Percentage of graduates from USG-supported tertiary education programs employed	0	20
23	Number of CSOs and government agencies strengthened	0	20
24	Total number of direct beneficiary	0	

The Project Management Board (PMB) also met on 12<sup>th</sup> November, 2015 to review project activities, particularly Year 2 Work plan. The PMB was established by the Vice-Chancellor of the University of Cape Coast at the inception of the project to have fiduciary responsibility and serve to as an advisory and decision-making body authority for the project.



The meeting was also used to select short-term technical assistants for some specific collaborative activities with DFAS as follows:

	<b>Assignment</b>	<b>Institution</b>	<b>Lead Expert</b>
i.	Assessment of Biodiversity and Health of Coastal Ecosystems in Ghana	Dept. of Fisheries and Watershed Mgt., KNUST	Drs. Regina Esi Edziyie and Daniel Adjei-Boateng
ii.	Collaborative Research on Fisheries Stock Assessment of Some Selected Commercially Important Marine Fish Stocks in Ghana	Department of Fisheries and Marine Sciences, University of Ghana	Prof. Patrick Kwabena Ofori-Danson
iii.	Assessment of Marine Fisheries Governance Issues in Ghana	Department of Animal Biology & Conservation science, University of Ghana	Dr. George A. Darpaah
iv.	Capacity Strengthening of Community-Based Groups	Private Consultant/ World University Service, Canada	Abena Adubea Acheampong
v.	Promoting Supplementary Livelihoods in Coastal Communities in Ghana	Private Consultant/ World University Service, Canada	Abena Adubea Acheampong
vi.	Implementation of Policy and Research Dialogues in Ghana	Dept. of Fisheries and Watershed Mgt., KNUST	Dr. Benjamin Betey Campion

### 2.3 Renewal of contracts for project staffs

Key project staff were appointed at the onset of the project to provide program, administrative, technical and research support for the efficient management of USAID technical and financial support to the Department of Fisheries and Aquatic Sciences. The support comes in the form of staff with requisite background and experience employed to the following specific positions:

- Project Management & Technical Support – 1 person
- Project Monitoring & Evaluation Support – 1 person
- Research Assistants – 6 persons

In principle, as per the terms of employment, contract appointments to these positions are renewed annually. Therefore the appointments were renewed or extended in this quarter for another financial year i.e. up to 30<sup>th</sup> September, 2016.

### 2.4 Annual reporting on the project

During the period under review, an annual report covering the period of Year One (October 2014-September 2015) was submitted to the USAID and received approval. This requirement is in line with the agreement (PIL. 641-A18-FY14-IL#007). It is mandated that recipients will submit annual progress report by October 30 of each year to the USAID Activity Manager for review and verification of accomplishment of the activities. The report also provided updates on progress in meeting the indicators detailed in the annual M&E plan.



Key accomplishments reported are as follows:

- Strengthened program management procedures of the Project Management Board (PMB) and the Project Management Team (PMT) both serving as a multidisciplinary institutional anchor for the Initiative

- Catalyzed actions for policy dialogue/stakeholder consultations at district and national levels in all four coastal regions and targeted inputs into the Fisheries Law Act 625 and Regulations that was recently passed into law (LI 1968 of 2010)
- Hosting of coastal management specialist from the University of Rhode Island as part of operationalization of the Centre for Coastal Management
- Project launch and Commissioning of the Fisheries and Coastal Research Laboratory at the University of Cape Coast
- Memoranda of understanding (MOU) with University of Rhode Island and Florida Gulf Coast University signed, initiated partnerships with other universities (Ghana, Norway and UK) and collaboration with other 10 public sector universities and research institutions in Ghana
- Fifteen (15) scholarships awarded for PhD and MPhil studies within DFAS
- Conducted planning processes and recruitment of three (3) consultants from local and private sector —to identify and prioritize strategies for addressing critical coastal zone issues notably (i) climate change adaptation (ii) supplementary livelihoods and (iii) policy dialogue and sensitization
- The completion of tendering and contracting process for the procurement of equipment for the newly refurbished Fisheries and Coastal Research Laboratory
- Acquisition of a 65 kVA generator set, computers and accessories.

## 2.5 Work Planning for Year Two

The work plan for the second year was undertaken during a workshop of stakeholders at Axim Beach Hotel in the Western Region in October, 2015. The objective was to discuss and provide strategic overview and approach for the Year 2 timeline activities. The program was facilitated by AfricaLead and attended by university management and other key USAID funded sister projects including the Sustainable Fisheries Management Project (SFMP) and the Coastal Sustainable Landscapes Project (CSLP). The workshop also resulted in a plan aimed at achieving more effective and efficient support services at the university level that can ensure smooth project implementation towards achieving desired established Goals of the Project.



Work Planning Workshop involving Key Project Stakeholders at Axim

Key issues highlighted under the Year Two Plan cover:

- a) Development of a Procurement Plan for Year 2
- b) Review of Implementation Guidelines (tools) relative to: the Performance Monitoring Plan (PMP); the Environmental Monitoring and Mitigation Plan (EMMP); Monitoring and Evaluation (M&E) System and Gender Mainstreaming Plan



- c) The need to enhance publicity of the Project through radio and other electronic media including the development of website for CCM
- d) Outlining PhD and MPhil research topics and assigning supervisory roles
- e) Development of a Laboratory Management Plan (LMP)
- f) Development of maintenance schedule for equipment
- g) Awarding contracts for research and extension activities
- h) Enhancing publicity activities of the project
- i) Equipping the Fisheries and Coastal Research laboratory with equipment
- j) Refurbishing of offices of academic staff
- k) Initiating processes for acquisition of relevant books and journals for the library
- l) Procurement of additional project vehicles
- m) Development of a Business Plan for CCM
- n) Hiring a driver to complement the effort of university drivers to support ongoing extension and field research travels of the Project.



## 2.6 Development of procurement plan

One of the major challenges encountered in Year One of the Project was the issue of procurement of project items and contracting. Project procurement issues are dealt with at the Procurement Section of the University. Procurement and contracting processes normally take a long time to complete which resulted in the delay of project activities in the first year. Learning from experiences in Year One, Project staff met with officials of the Procurement Section to discuss and develop a Procurement Plan for Year Two and budget lines based on planned activities for Year Two of the project to ensure the smooth and timely implementation

of project activities. After useful discussions about what to do and what the plan should entail, the Head of the Procurement Section was specifically tasked to develop the Plan and members of Project staff were also tasked to closely monitor the Plan to make sure it is fully implemented.

## 2.7 Meeting with USAID and other Donor Implementing Partner meetings

In the first quarter of FY 2016, there was a visit by the new Director, Mr. Kevin Sharp, the Director of the Economic Growth Office and Mr. Justice Odoi (Environmental Officer) paid a half day working visit to the University of Cape Coast and the Department of Fisheries and Aquatic Sciences on the 24th November, 2015. The two were welcomed by the Pro Vice-Chancellor, Prof. John Nelson Buah and some members of the Project Management Board at the Council Chamber of the university. In attendance was the Dean of the School of Biological Sciences Prof. Johnson Boampong, the Project Manager Dr. Denis Aheto. Also Prof. John Blay, the Coordinator of the Centre for Coastal Management and Dr. Noble Asare, M&E Coordinator of the Project were in attendance.



The visit was to familiarize himself with the USAID/UCC FCMCBSP, meet with some top officials of UCC, Academic and Project staff as well as students of DFAS. After meeting with some top officials of the University to discuss the collaboration between USAID and the University, the Director visited the DFAS to be briefed about the project and program activities by the Project Manager with other staff in attendance. There was a question and answers session where the Director sought clarifications from DFAS staff and vice-versa.

The discussions mainly centered on challenges encountered by the project in Year One as well as the opportunities, ways forward for tackling the challenges and making use of the opportunities in subsequent years, ensuring the sustainability of the project and project facilities where the Business and Strategic Plans of the CCM were seen as means of long-term sustainability and project finance issues and reporting. After meeting with the Academic and Project staff, the Director also met with Students of DFAS to discuss the USAID/UCC project scholarship application process, students' research areas and projects, challenges and opportunities. The visit ended with a tour of the Fisheries and Coastal Management Research

Laboratory where the Director promised to be part of the commissioning of the laboratory after stocking it with all the laboratory and field equipment.

## 2.8 Activities Completed in the First Quarter

### Key Activities Completed within the First Quarter:

- Year 1 Annual Report completed and approved by USAID
- Year 2 Work plan completed and approved by USAID
- Project Management Board meeting held
- CCM Board Meeting held
- Procurement Plan for Year 2 developed
- Award of contact for refurbishment of Lecturers offices
- Processes initiated with the Ghana Standards Board Authority for laboratory certification
- National Publicity of the project i.e. Joy FM
- Call for Applications for MPhil and PhD Scholarships
- Proposals from PhD students vetted
- Processes initiated with University to secure e-journals, books, and other electronic media for DFAS library
- Renewal of contract for project support staff
- Applications for duty exemptions for equipment and vehicles
- Monitoring and Evaluation workshop for Feed the Future implementing partners attended
- National Dialogue on Policy and Research organized in collaboration with the Ministry of Fisheries and Aquaculture Development
- Monitoring and Evaluation workshop for Feed the Future implementing partners attended

**Table 2:** Overview of Actions Achieved over the First Quarter Timeline (Oct-Dec. 2016) in Year 2

	Activity	Description/ Outputs	Timeline (Oct 2015- Dec 2015)		
			Oct	Nov	Dec
1.1.1	<b>Renovating and equipping Fisheries and Coastal Research Laboratory</b>	Installation of safety devices (smoke alarm and fire extinguishers)			
		Delivery of specialized laboratory equipment	√	√	√
		Delivery of ancillary accessories for specialized laboratory equipment	√	√	√
		Installation of specialized equipment			
		Scheduled maintenance laboratory equipment			



	Activity	Description/ Outputs	Timeline (Oct 2015- Dec 2015)		
			Oct	Nov	Dec
		Procurement of remaining specialized laboratory equipment and accessories			√
		Procurement of chemicals and reagents for laboratory use	√	√	√
1.1.2	<b>Refurbishing and equipping office/lecture/computer rooms and library</b>	Refurbishment of existing office spaces in the Department		√	√
		Installations of antivirus software for running project	√		
1.1.3	<b>Acquisition of vehicles to support educational, training, research and extension activities</b>	Delivery of 4x4 pickup vehicle for field work			√
		Delivery of a 30-seater bus for field and educational trips			
		Procurement of comprehensive insurance cover for 4x4 pickup truck			√
		Scheduled maintenances			√
1.2.1	<b>Academic and technical staff capacity strengthening</b>	Capacity building assessment			
		Staff training in use of new laboratory equipment	√	√	√
1.2.2	<b>Operationalizing of the Centre for Coastal Management</b>	Finalization of the strategic plan (2014-2019)			
		Development of business plan		√	√
		Stocking library with current and relevant books and periodicals		√	√
		Staffing (administrative and technical staff, driver)			√
		Internet connectivity and network management facility for new CCM offices		√	√
		Publicity (CCM website, policy briefs and dialogues, radio talk shows, bill boards, paraphernalia and souvenirs etc.)			√
		Scientific publication of all research output for the year			
1.2.3	<b>Support for postgraduate (MPhil. and PhD) training program</b>	Funding 10 MPhil. (5 Year One & 5 Year Two) and 5 PhD students	√	√	√
		Graduate training through split-site arrangements at URI		√	√
1.2.4	<b>Undergraduate research grants for 32 students</b>	Funding of research projects of 32 undergraduate students			√
2.1.1	<b>Conducting fisheries stock assessment</b>	Award of contract for short-term technical assistance			√

	Activity	Description/ Outputs	Timeline (Oct 2015- Dec 2015)		
			Oct	Nov	Dec
		Monitoring of the status of commercially important marine fish stocks (i.e. growth, mortality & exploitation levels)			
		Identify different measures of effort in the fishery			
		Determine most reliable measure of CPUE in the fishery			
		Compare current size distribution of species with previous records			
2.1.2	<b>Conducting research and assessment on marine fisheries governance issues</b>	Award of contract for short-term technical assistance			√
		Identify and evaluate various management strategies			
		Introduce, monitor and evaluate co-management strategies in selected fishing communities			
		Disseminate effective management strategies through media publications and workshops			
2.1.3	<b>Research on fish and shellfish of commercial value</b>	Research on the lagoon tilapia (black-chinned tilapia) fingerling production and growth			
		Establish a demonstration farm for mangrove oyster			
		Research in the areas of <i>in vitro</i> fertilization, larval and spat rearing of the mangrove oyster			
		Experimental culture of marine shrimps			
		Information gathered disseminated through publications, seminars and conferences			
2.1.5	<b>Monitor the biodiversity and health of coastal ecosystems</b>	Periodically examine the biodiversity of fish, benthic invertebrates and mangrove communities in lagoons and estuaries			
		Monitor environmental parameters of selected brackish water ecosystems, occurrence of algal blooms and invasive species			
		Ascertain the ecological health of some coastal water bodies			

	Activity	Description/ Outputs	Timeline (Oct 2015- Dec 2015)		
			Oct	Nov	Dec
		Information gathered disseminated through publications, seminars and conferences			
2.1.6	<b>Developing marine and coastal fisheries database</b>	Towards data acquisition on hydrography, plankton, trophic interactions and biological rates, abundance and biomass of fish and other biological communities in Ghanaian waters collated and standardized	√	√	√
2.2.1	<b>Developing material and conducting training on integrated coastal management</b>	Award of contract for short-term technical assistance			
		Produce ICM guidebook and tools			
		Produce fisheries management guidebook and tools			
2.2.2	<b>Developing material and conducting training on fisheries management</b>	Fisheries management guide book and educational materials produced			
		Local government development planners trained in fisheries management			
2.2.3	<b>Developing manuals and updating training materials on climate change adaptation and mitigation</b>	Review and update the manual and tools on coastal adaptation and mitigation of climate change			
		The manual and tools used to train relevant stakeholders			
		Stakeholders with enhanced knowledge on climate change adaptation and mitigation graduated			
2.2.4	<b>Developing material and conducting training on the use and application of Geographic Information Systems (GIS)</b>	Development of spatial plan for Elmina and Cape Coast areas for integrated coastal management			
		Geographic systems including computers and GIS software provided to CCM			
2.2.5	<b>Engaging policy makers to address coastal and fisheries issues</b>	Hold roundtable discussions with policy makers	√	√	√
		Prepare and disseminate policy briefs and articles on coastal issues and best practices	√	√	√
		Disseminate information gathered through electronic and print media	√	√	√

	Activity	Description/ Outputs	Timeline (Oct 2015- Dec 2015)		
			Oct	Nov	Dec
2.2.6	<b>Building institutional partnerships and collaboration</b>	MoU with collaborating institutions (research activities, joint workshops and conferences, joint publications)	√	√	√
		Shared research interest that will provide opportunities for collaboration between faculty/scientists and students at both institutions	√	√	√
2.2.7	<b>Wetlands ecological health monitoring using school clubs and communities</b>	Train and resource school clubs and communities to regularly monitor ecological health of wetlands			
		Take remedial measures where necessary to restore ecological health of coastal waters			
		Acknowledge and reward participating schools			
2.2.8	<b>Strengthening community-based groups</b>	Establish and/or strengthen eight (8) community-based fisheries and co-management programs	√	√	√
		Strengthen existing community-based fisheries and co-management programs			
		Disseminate information gathered through electronic and print media, publications and workshops			
		Develop management bye-laws together with district assemblies and traditional authorities			
2.2.9	<b>Promoting supplementary livelihoods in coastal communities</b>	Train fishers (men and women) in lagoon tilapia and mangrove oyster culture, apiculture (bee culture), and land snail rearing			
		Monitor and evaluate alternative livelihood activities introduced to fishers			
		Disseminate outcomes through publications, workshops and electronic media			
	<b>Shipping &amp; Consumables</b>	Procurement and shipping of laboratory equipment and chemicals	√	√	√
		Consumables (Generator Fuel etc.)			

### 3.0 PROJECT OUTPUT 1.1: IMPROVED INFRASTRUCTURE

#### 3.1 Activity 1.1.1: Renovating and Equipping Fisheries and Coastal Research Laboratory

This component broadly aims at revamping the existing laboratory for the Department of Fisheries and Aquatic Sciences to facilitate execution of the project. It is expected that at the end of this activity, the physical layout of the laboratory would have been designed and refitted with relevant equipment acquired and installed.

During the first quarter of Year 2, processes were initiated for sole sourcing for remaining field and laboratory equipment, and chemicals. Significant achievement was that all consignments of field and research equipment arrived at the Tema Port and at the time of this report, the 1<sup>st</sup> consignment had been delivered at UCC stores. Appendix 1 shows the list of items that have been received at UCC stores for inventory.

Application for duty exemption for the remaining equipment was also made for clearing remaining shipments. The period was also used to secure space at the School of Biological Sciences and allocated area for containers (equipment) and approval sought Directorate of Physical development and Estate Management (DPDEM).







First consignment of laboratory and field research equipment



USAID/UCC Project Research Boat Bayliner 175BRE fibreglass boat with 135hp Mercruier WPS Engine - 5.36 metre long

### 3.2 Activity 1.1.2: Refurbishing and Equipping office/Lecture/Computer rooms and Library

During the first quarter of Year 2 timeline, notice was given to lecturers on refurbishment of their offices. An approved contractor submitted a schedule of work and notices served to lecturers is contingent on submission of work schedule by contractor.



Main entrance to the laboratory within the SBS building



Students in a lecture at the refurbished laboratory with overhead projector to enhance interactive learning



Refurbished CCM Office Space with Computers, Photocopier Machine, Overhead projector and related accessories

Refurbished DFAS General & HOD's Offices with Computers and Accessories including a Multipurpose Photocopier Machine

### 3.3 Activity 1.1.3: Acquisition of Vehicles to Support Educational, Training, Research and Extension Activities

The intention of this activity is to purchase three vehicles to facilitate graduate and undergraduate students' research, field excursions, and extension work of the Centre for Coastal management. During the period under review, a 4x4 pick-up truck was received from Mechanical Lloyd Ghana Company Ltd. (Registration No. GT 928 - 16). This brings the total number of project vehicles to two.



A Pick-up truck (Ford F150) has been procured in addition to the 4x4 cross-country vehicle (Toyota Prado) to support research within the Department

Unfortunately the procurement of the 30-seater Coaster Bus has been met with unforeseen delay on the part of the supplier.

## **4.0 PROJECT OUTPUT 1.2 INCREASED TECHNICAL AND SCIENTIFIC KNOWLEDGE**

### **4.1 Activity 1.2.1: Academic and Technical Staff Capacity Strengthening**

DFAS has established MoU with the Department of Biological Sciences at Florida Gulf Coast University (DBS-FGCU) with an intended goal to develop joint research activities and professional training programs within the context and objectives of ongoing project. Specifically it is planned for seven staff of DFAS (four academic staff and two technicians) to benefit from training on the use of new scientific equipment. During the quarter, contacts were strengthened for the identified staff to travel to the States in September, 2016 to visit the following facilities:

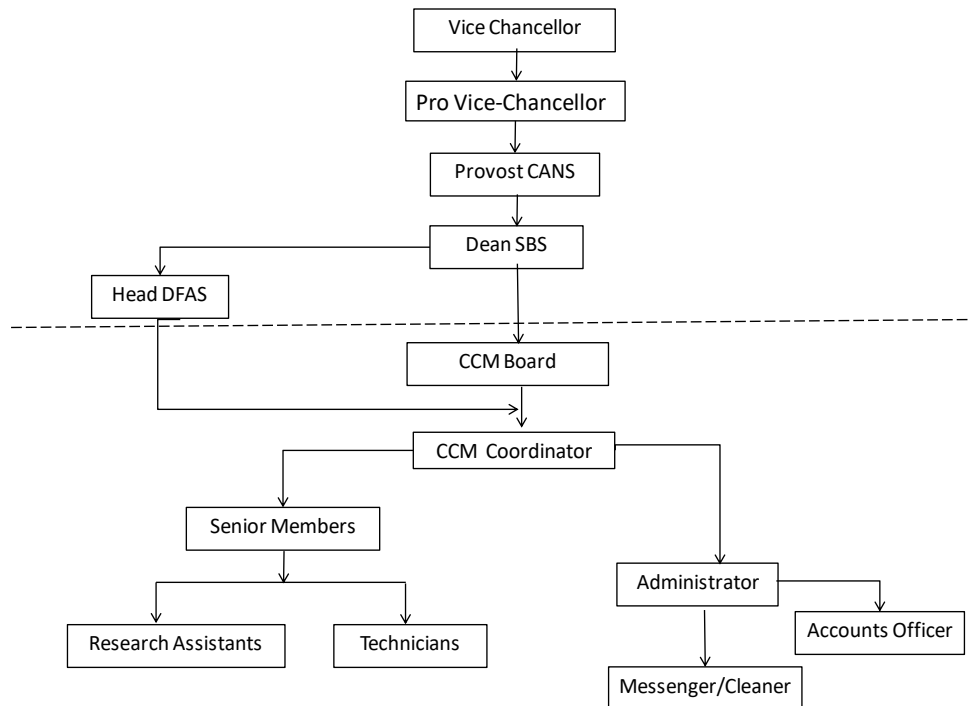
- Mote Marine Laboratory is an internationally recognized marine research and education facility that conducts a significant amount of research on marine fisheries.  
<https://mote.org/>
- Florida Fish and Wildlife Service that houses many research facilities around the state, several are located within 2 hours drive from FGCU:  
<http://myfwc.com/research/about/information/locations/>
- Rookery Bay National Estuarine Research Reserve located about 1 hour from campus and conducts marine research, fisheries research, and upland habitat research:  
<https://rookerybay.org/>

### **4.2 Activity 1.2.2: Operationalization of the Centre for Coastal Management**

A CCM Board meeting was held in the quarter with focus on the organogram and logo of CCM that were approved by the Board at the meeting. For promoting the Centre car windshields and other promotional materials including magnetic stickers for vehicles were approved. The Board also discussed among others strategic partnerships and linkages on the basis of the strategic plan.

Authority was also given to develop a business plan for the Centre and a 5-member Committee was appointed by the Board including: Prof. John Blay, Coordinator of CCM, as Chairman, Dr. Denis W. Aheto. HOD, Fisheries & Aquatic Sciences, Mrs. Regina Amoako-Sakyi, Geography & Reg. Planning, Mr. George Anti, Fisheries Commission, Cape Coast, Mr. Abraham Esson, School of Business, (Incubation Centre) as members.





**Figure 2: Organogram of the Centre for Coastal Management**



The Board and Co-Opted Members of the Centre for Coastal Management (CCM)

**Front row sitting from Left:** Mrs. Regina Amoako-Sakyi, Geography & Regional Planning; Prof. Bondzie-Simpson, Founding Dean of the Law Faculty (Chairman); Prof. John Blay, Coordinator of CCM; Ms. Margaret Winwah, DFAS Administrator. **Back row standing:** Dr. Joseph Aggrey-Fynn, DFAS faculty member and Director of Oil & Gas Institute ; Dr. Noble Asare, DFAS Member and M&E Coordinator; Dr. Denis Aheto, HOD & Project Manager USAID/UCC Project, Ms. Esinam Attipoe, USAID/UCC Project Support & Mr. George Anti, Fisheries Commission of Ghana

Following advertisements, two applications were received and Mr. Jacob Ainoo-Ansah, a business development specialist and entrepreneur was selected to cooperate with DFAS in the development of a business plan for CCM. A content for a proposed website for CCM was also discussed and agreed upon. The Board mandated the Project to engage a Website Developer outside UCC to secure a Domain Name for the Centre’s website.



*Figure 3: Approved CCM logo*



Mr. Jacob Ainoo-Ansah, Business Development Specialist

The short-term technical assistance is aimed at framing a business plan that evaluates all activities of DFAS and account for their economic viability including descriptions and analysis of identifiable business prospects for income generation, where possible. The plan will serve as a sound guide for working towards a desired future, envisioning sustainability and financial self-reliance.

As part of operationalization of the Centre for Coastal Management (CCM), the plan should identify key strengths, weaknesses, opportunities and threats (SWOT) and relate them to the strategic goals<sup>1</sup> of CCM and DFAS in order to introduce or recommend specific business models with detailed operational activities towards the achievement of the Vision and Mission of the Centre.

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<sup>1</sup> Please refer to the following documents:

- Strategic Plan for the Department of Fisheries and Aquatic Sciences (2014-2017)
- Strategic Plan for the Centre for Coastal Management (2012-2017)
- Proposal for the Establishment of the Centre for Coastal Management (2012)
- The USAID/UCC Fisheries and Coastal Management Capacity Building Support Project (2014-2019)
- The Second Corporate Strategic Plan of the University of Cape Coast (2012-2017)
- The School of Biological Sciences Strategic Plan (2014-2017).



Centre for Coastal Management Office located in the Faculty of Education Lecture Theatre (FELT) Complex, University of Cape Coast

#### **4.3 Activity 1.2.3: Support for Postgraduate (MPhil & PhD) Training Program**

This aspect of the project provides financial and material support for the training of graduate students in Fisheries Science, Aquaculture, Integrated Coastal Management, Oceanography and Limnology. Additional expertise for the training of students will be sought from within Ghana and US through split-site arrangements. It is expected that at the end of the project, ten (10) PhD graduates will be produced alongside twenty (20) MPhil graduates.



Academic staff meeting with USAID funded postgraduate (PhD and MPhil) students of DFAS

In respect of this, advertisements for application for scholarships was publicized in the newspapers and other international outlets. Once admitted, the total number of PhD and MPhil students funded under the program will increase to ten (10) and fifteen (15), respectively. Meanwhile proposals for ongoing MPhil and PhD research were reviewed and funded within the period. Request for a standing order for student stipend was also implemented.

**Table 3: Postgraduate PhD Research Topics (2015/2016 Academic Year)**

No.	Name of Student	Gender	Programme of Study	Research Topic	Thematic Area	Supervisors
<i>PhD Students</i>						
1	Ahiah Lawrence Armah	M	Aquaculture	Culture potential of selected populations of black-chinned tilapia ( <i>S. melanotheron</i> ) in Ghana	Activity 2.1.3: Research on Fish and Shellfish of Commercial value	Prof. John Blay Prof. Kobina Yankson
2	Michelle Naa Kordei Clottey	F	Fisheries Science	Assessment of the Threadfin (Polynemidae) Fisheries in the Central and Western Regions of Ghana	Activity 2.1.1 Fish Stock Assessment	Dr. Joseph Aggrey-Fynn Prof. John Blay
3	Jemimah Etorname Kassah	F	Fisheries Science	Assessment of the fishery and nutrient value of chub mackerels ( <i>Scomber japonicas</i> Houttuyn, 1782) in Ghana	Activity 2.1.1 Fish Stock Assessment	Prof. John Blay Dr. Najih Lazar
4	Rebecca K. Essamuah	F	Integrated Coastal Zone Management	Developing decision support system for prioritizing conservation of marine spaces in urban areas of Ghana: A case study of the Fosu Lagoon, Cape Coast	Activity 2.1.5: Monitor Biodiversity and Health of Coastal Ecosystems	Dr. Denis Aheto Dr. E.A. Acheampong
5	Margaret F.A. Dzakpasu	F	Oceanography & Limnology	Assessment of ecological conditions of some coastal lagoons and estuaries using a bioindicator approach	Activity 2.1.5: Monitor Biodiversity and Health of Coastal Ecosystems	Prof. Kobina Yankson Dr. Emmanuel Lamptey



**Table 4:** Postgraduate MPhil Research Topics (2015/2016 Academic Year)

No.	Name of Student	Gender	Programme of Study	Research Topic	Thematic Area	Supervisors
<i>MPhil Students</i>						
1	Pearl Sakyi Djan	F	Fisheries Science	Stock assessment of some commercially important small pelagics of coastal waters of Ghana	Activity 2.1.1 Fish Stock Assessment	Dr. Joseph Aggrey-Fynn Dr. Najih Lazar
2	Elsie Akushika Debrah	F	Integrated Coastal Zone Management	A pilot study on small-scale fisheries monitoring using earth observation system and value chain analysis	Activity 2.1.1 Fish Stock Assessment	Dr. Denis Aheto Dr. George Wiafe
3	Daniel Adjei	M	Integrated Coastal Zone Management	Monitoring of remote sensing and catch data to evaluate hot spots for Tuna species in Ghanaian coastal waters	Activity 2.1.1 Fish Stock Assessment	Dr. Denis Aheto Prof. John Blay
4	Bright Asare	M	Aquaculture	Current status and culture potential of the mangrove oyster ( <i>Crassotrea tulipa</i> ) in Central Region of Ghana	Activity 2.1.3: Research on Fish and Shellfish of Commercial value	Prof. Edward Obodai Dr. Emmanuel Acheampong Mr. Jacob Ainoo-Ansah
5	Prince Dela Tseku	M	Aquaculture	Culture performance of <i>Sarotherodon melanotheron</i> fed on different formulated feeds	Activity 2.1.3: Research on Fish and Shellfish of Commercial value	Prof. Kobina Yankson Dr. Emmanuel Acheampong Mr. Jacob Ainoo-Ansah

#### 4.4 Activity 1.2.4: Undergraduate Research Grants

This will involve small grants given to undergraduate students to support their final year project works. It is expected that this initiative will increase enrolment of undergraduate students. In principle, it is targeted to fund one hundred and fifty (150) students' projects over the five-year period. Since its inception, the program has supported 38 undergraduate students. The second quarter was used to evaluate student proposals for award. During this period, the project also developed specific guidelines for use of the grants by the students as follows:

- *Receipts:* Receipts for all purchased goods and hotel accommodation must bear the project's name - USAID/UCC Fisheries Project (in-short). A VAT receipt (most often) must be obtained if possible. On the VAT receipt, and the students are to ensure the VAT component is clearly stated.
- *Transportation:* In cases where students are unable to secure receipts e.g. Taxi or transport (bus ticket could be handed in if applicable), they are expected to note down the various expenses on transport.
- *Accounting for fish:* Certificates of honor are picked from the Project Management office for the said purpose. In addition, students are to notify Project Management office about an hour to their arrival at the lab from the field with purchased fish for inspection. It is the duty of all students to render accounts to their supervisors for onward submission to the Project Management office.

These guideline is also applied to the MPhil and PhD students' research grant as well.



**Table 5:** Undergraduate Research Topics (2015/2016 Academic Year)

No.	Name of Lecturer/ Supervisor	Topic	Number of Students
1	Prof. Kobina Yankson	Effects of tidal exposure on aspects of the population of Mangrove Oyster ( <i>Crassostrea tulipa</i> ) in Benya Lagoon.	3
2	Prof. John Blay	<ul style="list-style-type: none"> <li>i. Beach seine samples from Cape Coast:               <ul style="list-style-type: none"> <li>a. <i>Chloroscombrus chrysurus</i>, <i>Selene dorsalis</i> and <i>Trachinotus ovatus</i> (Carangidae), <i>Ilisha africana</i> and <i>Sardinella</i> spp. (Clupeidae).</li> <li>b. Studies on these fishes will focus on size distributions, length-weight relationships, food habits, size at maturity and maturity state.</li> </ul> </li> <li>ii. Beach seine samples from Anlo Beach:               <ul style="list-style-type: none"> <li>a. <i>Pseudotolithus</i> spp. (Sciaenidae), <i>Brachydeuterus auritus</i> (Haemulidae), maturity <i>Sphyraena sphyraena</i> (Sphyraenidae)</li> <li>b. Studies on these fishes will examine size distributions, length-weight relationships, food habits, size at maturity and maturity state.</li> </ul> </li> <li>iii. Shrimps and cuttlefish from Cape Coast               <ul style="list-style-type: none"> <li>a. This study will require identification of shrimps, and length and weight measurement of individuals for analysis of size distribution and length-weight relationship of the species. Percentage of gravid specimens in the sample and fecundity of the species will be determined. Cuttlefish (<i>Sepia officinalis</i>) will also be measured for mantle length and body weight to study the</li> </ul> </li> </ul>	4

No.	Name of Lecturer/ Supervisor	Topic	Number of Students
		<p>length distribution and length-weight relationship.</p> <p>iv. Shrimps and cuttlefish from Anlo Beach*</p> <p>a. This study will require identification of shrimps, and length and weight measurement of individuals for analysis of size distribution and length-weight relationship of the species. Percentage of gravid specimens in the sample and fecundity of the species will be determined. Cuttlefish (<i>Sepia officinalis</i>) will also be measured for mantle length and body weight to study the length distribution and length-weight relationship.</p> <p>v. Juvenile marine fish in Benya lagoon and Kakum estuary*</p> <p>a. The lagoon and estuary fish will be sampled with cast nets. Fish will be measured to length and weight; stomach contents will be examined and the contents identified; maturity state of fish (gonadal state) will be determined.</p>	
3	Dr. Noble Asare	<p>i. Influence of hydrographic conditions on fish ecology in an estuarine system</p> <p>ii. Traditional means of tidal prediction and use in artisanal fishery</p> <p>iii. Investigating aspects of pollution indicators in an urban lagoon</p>	5
4	Dr. Joseph Aggrey-Fynn	Monitoring of Beach Seine landings for various coastal fish species of commercial importance along Cape Coast – Elmina Shores	5



No.	Name of Lecturer/ Supervisor	Topic	Number of Students
5	Dr. Emmanuel Acheampong	<ul style="list-style-type: none"> <li>i. Climate variability effect on coastal fisheries: A case study on coastal upwelling and fisheries production</li> <li>ii. Variation in species richness with coastal wetlands: niche structure or impact of sampling scale?</li> </ul>	5
6	Prof. Edward Obodai	<ul style="list-style-type: none"> <li>i. Sex ratio of Mangrove Oyster (<i>Crassostrea tulipa</i>) in the Benya Lagoon, Central Region of Ghana.</li> <li>ii. Effect of copepod infestation on the condition index of the garfish (<i>Abblenis hians</i>) landed at the Elmina Harbour.</li> </ul>	4
7	Dr. Denis Worlanyo Aheto	<p>The Fosu lagoon is undergoing a rapid degradation as a result of a combination of factors many of which are human-induced. Indicators of lagoons degradation posing a major threat to the ecological health and survival of the lagoon are:</p> <ul style="list-style-type: none"> <li>i. Silting reducing the depth and volume</li> <li>ii. Pollution of the water by sewage, discharge of hospital effluents, defaecation around its shores, heavy metals and solid waste</li> <li>iii. Loss of mangroves and other trees due to cutting for fuelwood</li> <li>iv. Loss of fish nursery capacity and fish biodiversity as well as other wildlife</li> <li>v. Frequent blooms of freshwater and terrestrial flora indicating extreme eutrophication</li> </ul> <p>The study proposes to investigate</p> <ul style="list-style-type: none"> <li>a) Aquatic environmental parameters to ascertain water quality</li> <li>b) Status of the fishery to assess level of productivity and biodiversity</li> <li>c) Pollution levels in the water and fish to determine thresholds</li> </ul> <p>Methods:</p>	5

No.	Name of Lecturer/ Supervisor	Topic	Number of Students
		i. Morphometric changes of the lagoon (surface area and depth) ii. Monitoring for temperature, turbidity, pH, salinity, oxygen and nutrients (nitrates and phosphates) using water quality meters and field test kits iii. The quantity (kg) of solid wastes (plastics, scrap metals) and the sources of the different materials will be determined iv. Particulate Organic Matter Content (POM) will be determined v. Biological Oxygen Demand will be assessed after five days of incubation and concentrations of oxygen using the Winkler Method	
<b>Total</b>			<b>31</b>

## **5.0 PROJECT OUTPUT 2.1: INCREASED MARINE AND COASTAL RESEARCH AND RESOURCE ASSESSMENTS**

### **5.1 Activity 2.1.1: Conducting Fisheries Stock Assessment**

This activity will assess the status of commercially important marine fish stocks using length-based stock assessment methods. Different measures of effort and catch per unit effort (CPUE) based on number of boats, number of fishermen, number of nets, mesh sizes, hours spent at sea will also be investigated. Modeling for quantitative prediction of consequences of management actions will be undertaken. In the second quarter, a short-term technical assistance will be awarded for collaboration with DFAS. Prof. Patrick Ofori-Danson of the University of Ghana's Department

of Fisheries and Marine Sciences is supporting this effort. The TOR for the assignment is as described below:

- This assessment aims to gather monthly data on the landings (kg) and species abundance from 20 canoes (5 from Half Assini, 5 from Elmina, 5 from Tema, and 5 from Keta), 12 semi-industrial boats (3 from Sekondi, 3 from Elmina, 3 from Apam and 3 from Tema), and 5 industrial vessels (2 from Sekondi and 3 from Tema)
- Data on landings to be obtained from Fisheries Commission recorders at the landing beaches. Length-based assessment methods will be used to estimate growth and mortality characteristics, exploitation rates and size at first capture of cuttlefish *Sepia officinalis*, shrimp species, Carangidae (e.g. *Caranx hippos*, *C. chrysos*, *Trachurus* spp. and *Decapterus* spp. ) and Sparidae (*Pagellus* spp., *Dentex* spp., and *Pagrus* spp.).
- Otoliths of fish specimens will be removed for analysis to establish age structure of the stocks. The food and feeding habits to determine the trophic status of the species, and aspects of the reproductive biology, e.g. sex ratios, maturity size, fecundity, and will be studied.



Prof. Partrick Ofori-Danson,  
Associate Professor in Fisheries  
Science, University of Ghana

## 5.2 Activity 2.1.2: Conducting Research and Assessment on Marine Fisheries Governance Issues

The first quarter was also used to frame research that will inform the introduction and/or strengthening of policies or actions in fisheries in Ghana beginning the Second Quarter. It will provide guidance to the Fisheries Commission and MOFAD, particularly in the implementation of the Fisheries Management Plan. It is the intended goal that this activity will strengthen the governance capacity, particularly at the community level, but also at the district, regional and national levels by clarifying institutional roles and responsibilities on the basis of the assessment and sharing of the scientific knowledge. The PMB approved the proposal of Dr. George Darpaah of the University of Ghana to lead this intervention.



Dr. George Darpaah, Senior  
Lecturer, University of Ghana,  
Legon

It is intended to be research-based with the aim of investigating traditional governance structures or customary social arrangements, local governance and decentralization, collaborative, community and any available community rights based management and their legal dimensions.

At the end of this activity the following outcomes will be expected:

- Key social issues at the local level militating against the industry outlined
- The role of women, traditional authority, and rules of engagement identified
- Various local management strategies identified and evaluated
- Effective community resilience strategies proposed
- Management strategies through media publications and workshops disseminated.

### **5.3 Activity 2.1.3: Research on Finfish and Shellfish of Commercial Value**

This activity is part of ongoing research by DFAS MPhil and PhD students. See activities 4.3 and 4.4 for reference.

### **5.4 Activity 2.1.4: Analysis of Value Chains of Fish Trade**

No planned activity was earmarked for the quarter under review.

### **5.5 Activity 2.1.5: Monitor the Biodiversity and Health of Coastal Ecosystems**

This activity contributes to long-term effort towards the restoration of a closed lagoon in Half Asini (*Awiane Aluonu*) which is under serious threat of extinction due to pollution and other forms of degradation. It is intended to use the ecosystem-based approach to conduct boundary surveys on the lagoon to inform local Government Agencies and other stakeholders in advocating for its conservation and the creation of necessary bye-laws on their wise use. The project will contribute to long-term effort towards the restoration of a closed lagoon in Half Asini (*Awiane Aluonu*) which is under serious threat of extinction due to pollution and other forms of degradation. It is intended to use the ecosystem-based approach to conduct boundary surveys on the lagoon to inform local Government Agencies and other stakeholders in advocating for its conservation and the creation of necessary bye-laws on their wise use. The PMB awarded the activity to experts from the Department of Fisheries and Watershed Management of the Kwame Nkrumah University of Science and Technology.

The first quarter was therefore used to develop TORs for implementation of the project beginning second quarter as follows:

- Collect data on the general flora and fauna species content of the lagoon including documentation on threatened species within the ecosystem.
- Provide ecological monitoring and evaluation indicators for that biological system
- Propose measures to support enrichment and management plan preparation.

- Recommend appropriate stakeholder engagement strategies for the sustained management of the wetland.

*Expected Outputs:*

- Data on the general flora and fauna species content of the lagoon collected
- Information on threatened species within the ecosystem compiled
- Indicators for the ecological monitoring and evaluation the lagoon provided
- Measures to support enrichment and management plan preparation proposed
- Strategies for committed stakeholder engagement for the sustained management of the wetland recommended.



### **5.6 Activity 2.1.6: Developing Marine and Coastal Fisheries Database**

The Project Management organized a two day workshop during the quarter to assemble the necessary conditions for the development of a prototype database on fisheries and coastal management in Ghana. The workshop was facilitated by experts from Computer House Technologies. The primary goal of the workshop was to come up with a framework for the organization, publishing, editing and maintenance of fisheries and coastal research data. The workshop was expected to outline efficient strategy for critical data collation, management and online distribution to support coastal resources management and research.





Database workshop with experts from Computer House Technologies Ltd. in Cape Coast. In attendance were Dr. Denis Aheto, Dr. Emmanuel Acheampong and Dr. Noble Asare of DFAS

The objectives of the workshop were to:

- Investigate and decide on the appropriate content management system for coastal/fisheries research data.
- Reach a consensus on critical data for fisheries and coastal research database.
- Establish a conceptual design for the database, its query interface and creation of insightful reports from database.
- Develop a protocol for the collation of data for the database.


At the end of the workshop, it was understood that the Project develops a user-friendly information and knowledge hub that can deliver large amount of constantly changing information and research works to its key audiences.

Pre-authenticated users will have access to specified information not available to un-authenticated users. The website front-end will interface with a database where users can search for materials in the resource collection. The back-end of the database shall be updated through a browser-based interface. It was concluded that to be effective, the website must be:


- easy and intuitive to navigate and update
- provide an intuitive search functionality connecting to an easily updated database
- provide customized content for authenticated users
- safe and secure
- the database should have the capability to interface with an online analytical processing tool in the future
- the database should be design utilizing a current language and allow room for upgrade
- the database should be accessible from all major browsers
- access to data and ability to perform specific actions within the database should be predefined by permission levels.

The Project officially registered the domain name “FishCoM Ghana” referring to “Fisheries and Coastal Management” (<http://www.FishCoM Ghana/index.html>).

incies/USAID/Database mgt/FishCoM Ghana/index.html Search



COASTAL ECOSYSTEMS | FISHERIES | AQUACULTURE | COASTAL MANAGEMENT



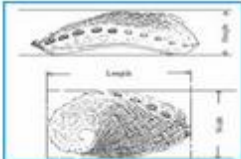

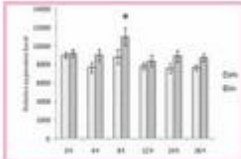
Studying impact of fisheries

**Welcome to FishCoM Ghana**

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**Research Update**

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Proposed Conceptual Front End Interface for the Database on Fisheries and Coastal Management in Ghana (FishCoM Ghana).

## 6.0 PROJECT OUTPUT 2.2: COMMUNICATION, EXTENSION AND OUTREACH IMPROVED

### 6.1 Activity 2.2.1: Developing Material and Conducting Training on Integrated Coastal Management

Integrated coastal management (ICM) is an important tool for sustainable management of the coastal environment and resource utilization. The coastal zone of Ghana represents a paltry 6.5 percent of its total land area but is inhabited by 25 percent of the country's population because of the numerous benefits that can be derived in this area. Although ICM as a policy tool was adopted by Ghana in the mid-1990s following a study by the World Bank/EPA Ghana (see *"Towards an Integrated Coastal Zone Management Strategy for Ghana"*), the country's coastal zone environments and resources continue to face multiple and serious challenges. This can largely be attributed to the lack of stakeholders' knowledge and understanding of the basic principles and skills to address the challenges in the coastal zone.

The USAID/UCC Fisheries and Coastal Management Capacity Building Support Project intends to hire a technical assistant to develop a training manual and materials in ICM for Ghana which will be used to train various stakeholders- planners, disaster managers, District, Municipal and Metropolitan Assemblies, environmental officers, fisheries officers, fishermen, fishmongers and community-based management groups. Doubtless, strengthening the capacity of stakeholders to manage the coastal zone and its resources will support the quest of the Government of Ghana for sustainable management of the coastal resources. Furthermore it will complement the commitment of the Ghana Government to the Feed the Future Program of the US Government's global hunger and food security initiative.

During the period under review, specific terms of reference were developed for this activity. It is envisaged to engage experts during the Second Quarter of Year 2 to support DFAS through a short-term cooperative technical assistance agreement. The key product of this technical assistance is an ICM training manual with PowerPoint presentations, videos of interactions of the coastal zone and human activities and other materials. The specific objectives are:

- a) Develop an ICM training manual with modules to be delivered within a period of five days highlighting the coastal environments found in Ghana, methods of assessing the condition

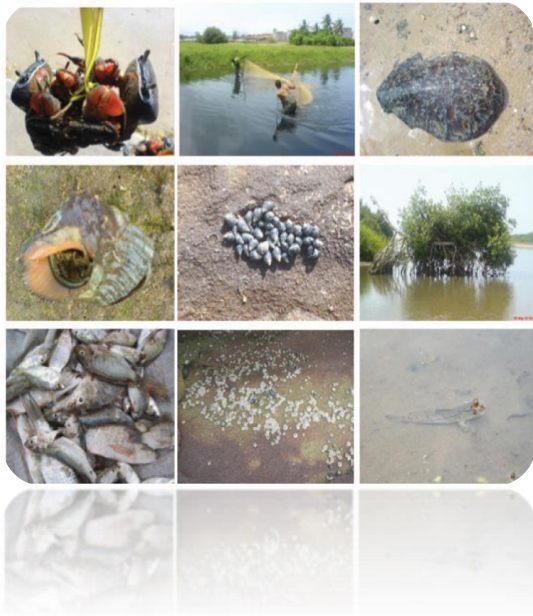


of coastal environments and their resources, integrated management approaches, and coastal management instruments (regulatory and economic instruments, and conflict resolution)

- b) Prepare an instructor's guide (including field and laboratory work) on the training manual as an Annex spelling out what is expected of the trainer
- c) Produce ICM materials including PowerPoint presentations of the modules, videos, charts and other relevant material
- d) Test the manual on a stakeholder group in the Cape Coast area

## 6.2 Activity 2.2.2: Developing Material and Conducting Training on Fisheries Management

Ghana's fisheries resources have been under serious threat over the years due to several factors including open access, overcapacity, inappropriate fishing methods, environmental degradation, and non-compliance of fisheries regulations among others. As a result the total fish catch from the marine fisheries has declined from previous high levels despite an expansion in fishing effort. This is indicative of overexploitation of the fishery and calls for concerted actions to manage the resources sustainably to benefit the present and future generations. In this regard, the USAID/UCC Fisheries and Coastal Management Capacity



Building Support Project intends to hire a technical assistant to develop a manual with supporting materials on fisheries management for training stakeholders in Ghana's fisheries sector. Personnel of the Fisheries Commission, environmental officers of the District Assemblies, community-based fisheries management groups, and NGOs would be target beneficiaries of the training.

Strengthening the capacity of stakeholders to manage the fisheries at all but especially the local level will go a long way to supporting Ghana Government's agenda for sustainable management of the coastal resources of the country. It will also complement the commitment of the Government of Ghana to the Feed the Future Program of the US Government.

The period was therefore used to develop a guideline for engagement of experts to support DFAS to implement this activity beginning second quarter as follows:

- a) Develop a training manual on fisheries management that targets lower and middle level governmental and non-governmental officials working in the



fisheries sector as well as community-based fisheries management groups. The manual should incorporate modules that can be delivered within a period of five days including community-based fisheries management as it is impossible for government fisheries agencies to properly manage fisheries without community involvement which encourages ownership of fisheries management actions and regulations.

- b) Prepare an instructor's guide (including field and laboratory work) on the training manual as an Annex spelling out what is expected of the trainer
- c) Produce fisheries management materials including PowerPoint presentations of the modules, videos, charts and other relevant material
- d) Test the manual on a stakeholder group in the Western Region

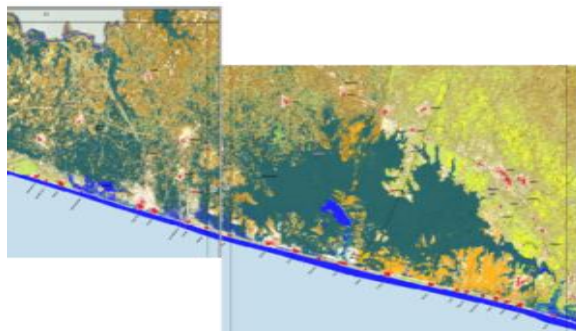
The key product of this technical assistance is fisheries management training manual with PowerPoint presentations, videos of interactions of the coastal zone and human activities and other materials.

### **6.3 Activity 2.2.3: Developing Manuals and Updating Training Materials on Climate Change Adaptation and Mitigation**

No event took place under this activity during the period under review. Event planning for this activity is programmed for second quarter.

### **6.4 Activity 2.2.4: Developing Material and Conducting Training on the use and Application of Geographical Information Systems (GIS)**

An outline of key products of this technical assistance activity were developed during the period in question with the idea that knowledge and skills for the application of spatial information technologies within CCM assessed, proposals for GIS capacity strengthening within DFAS and CCM outlined; Curriculum and materials for short-term GIS training developed and tested; and a framework for conducting business in GIS for coastal management established.



Overall, the activity is aimed at providing immediate access for PhD and MPhil candidates within the Department of Fisheries and Aquatic Sciences (DFAS) and scientists at the Centre for Coastal Management (CCM) to pursue relevant research agenda towards coastal environmental management, coastal planning, community resilience and social vulnerability to be facilitated through the setting up of an Environmental and Geographic information systems (GIS) Data Hub within CCM with objectives as follows:



- Conduct GIS Capacity Needs Assessment for CCM
- Determine the viability and usefulness of GIS technologies to CCM and the way that the CCM should conduct business relative to geographic information systems and applications for coastal management
- Determine the set-up of a GIS computer workstation within CCM
- Identify types of information and data needed and how they can be shared and used between UCC departments, government agencies and other stakeholders
- Identify the range of potential GIS applications for coastal management in Ghana
- Determine computer usage, level of expertise and requirements for students and staff of DFAS and CCM
- Determine internet usage, software, knowledge and fundamental technical capacity requirements
- Develop GIS course curriculum and training materials for a five-day training course for coastal management practitioners to provide direct technical skills and concepts in GIS
- Identify relevant state and non-state actors not limited to Department of Town and Country Planning and specific private entities
- Suggest ways the products could be integrated into an overall Environmental Data Hub to be established within CCM.

### **6.5 Activity 2.2.5: Engaging Policy Makers to Address Coastal and Fisheries Issues**

Ghana has a very fragile coastal ecosystem well-endowed with natural resources which are exploited by different sectors of the economy. This relatively small coast houses 25% of the nation's population and about 80% of the industrial establishments in Ghana thereby increasing the environmental pressure on the environment. Aside the environmental challenges, Ghana's fisheries sector is plagued with massive overcapacity of fleet, resulting in excess competition over the limited fish resources, declining productivity, economic inefficiency, and depressed fisher incomes. The traditional and political fisheries management arrangements and institutional have also, in recent times, failed to successfully manage the growing challenges in the fisheries sector. It is in the light of these environmental and fisheries management challenges that University of Cape Coast through the Fisheries and Coastal Management Capacity Building Support Project is conducting these research dialogues to facilitate the sustainable management of fisheries and the coastal zone of Ghana.

The highlight of these activities resulted in a national Stakeholders dialogue in December, 2015 at Mensvic Grand Hotel in Accra. In attendance was the Honorable Minister of MoFAD, Sherry Ayittey, Mr. Najih Lazar, Senior Fisheries Officer of the USAID Sustainable Fisheries Management Project and staff of DFAS.



Policy and Research Dialogue on Sustainable Fisheries and Coastal Management in Ghana. In attendance was the Honourable Minister in Charge of Fisheries and Aquaculture Development Sherry Ayittey, Heads of Departments from sister universities, regional representatives of fisheries associations and key officials of the Fisheries Commission of Ghana

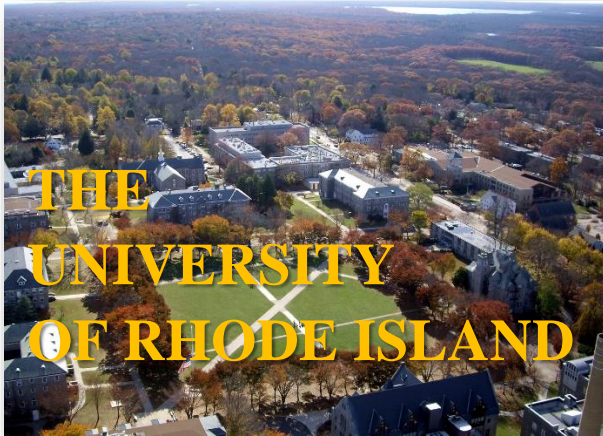
The overall finding of the National Policy and Research Dialogue is the general acceptance that illegal fishing methods is causing a decline in the catch and the willingness and unanimous agreement by all stakeholders that change is needed. At the meeting, stakeholders were unanimous that change has to be from the bottom: instigated and implemented by fishermen and fishmongers and supported by the local district assemblies, traditional authorities and the police. That is, existing fisheries and environmental laws and regulations can be enforced by these local stakeholders in order to attain the national fisheries management objectives.

It was concluded that as part of this capacity building objective of this project, DFAS should in the next years, among others, work with the Ministry of Fisheries and Aquaculture Development to initiate and facilitate the drafting, acceptance and implementation of fisheries and coastal environmental bylaws by the various district assemblies in the country.

### **6.6 Activity 2.2.6: Building Institutional Partnerships and Collaboration**

During the quarter, partnerships were strengthened with URI and ACDI/VOCA on the other hand. Arrangements for a high level delegation of five persons from the University of Cape Coast (UCC-Ghana) led by the Vice-Chancellor of the University Prof. Domwini D. Kuupole to the University of Rhode Island was stepped up. The visit was meant to further expand the development of the existing formal partnership between UCC and URI in areas of marine fisheries, aquaculture and coastal resources. Other members of the UCC delegation are Prof.

Ernest L. Okorley, Dean, School of Graduate Studies, Prof. Rosemond Boohene, Director of the Centre for International Education (CIE), Prof. Johnson Boampong, Dean, School of Biological Sciences and Dr. Denis Aheto, Head, Department of Fisheries and Aquatic Sciences and Project Director of the USAID/UCC Fisheries and Coastal Management Project.



The delegation was met with the President of URI, Prof. David M. Dooley and other officials at URI. The two institutions have received funding from the United States Agency of International Development (USAID) to implement various programs in marine fisheries and coastal management and to offer opportunities for collaboration and exchange of expertise.

DFAS also hosted Chris Davon and Dr. Don Rubadue from URI relative to specific research on the coastal zone to involve graduate students.



Meeting with some members of the CRC (URI) and Geography Department (UCC)

The CRC of the Graduate School of Oceanography is implementing a five year project in Ghana (2015-2019) funded by the United States Agency of International Development, named Sustainable Fisheries Management Project (SFMP).

During the period, DFAS also developed Scope of Work with ACDI/VOCA to be able to receive volunteers for some of its community interventions, especially those being managed by CCM. The specific activities under consideration include supplementary livelihoods and DFAS request for an expert to engage in long-term assignment (up to a semester) relative to teaching coastal management topics at DFAS.



Collaboration with various institutions

### **6.7 Activity 2.2.7: Wetlands Ecological Health Monitoring Using School Clubs and Communities**

On this activity the project drafted Memorandum of Understanding (MOU) for cooperation with *Hen Mpoano* and *Friends of the Nation*, both community-based advocacy NGOs focused on coastal environment. The purpose of the MoUs was to frame collaboration between the Department of Fisheries and Aquatic Sciences of the University of Cape Coast (DFASUCC) and the two local organizations to develop joint outreach, research and professional training activities within the context and objectives of the “USAID/UCC Fisheries and Coastal Management Capacity Building Support Project“. DFAS-UCC is the lead institution on the USAID Capacity Building Project and it seeks to implement activities jointly with local institutions that will be mutually beneficial and also contribute to the wise use of natural resources, biodiversity conservation, food security, and livelihoods development for the coastal communities in Ghana.

To this end, it is the intent of DFAS to work with both institutions and collaborate on the following activities:

- The development of wetland monitoring programs in coastal communities of Ghana.
- Targeted research, case study reviews and data collection on coastal zone issues and fisheries management by graduate students;

- Integrated coastal zone management issues (e.g. climate change adaptations, vulnerability assessments, where necessary) particularly practical field exercises for students and professionals.

*In relation to wetland monitoring program, the following process will be applied:*

1. DFAS has developed a coastal zone wetlands educational curricula made up of teacher's guide, students' manuals, visual presentations, outdoor classroom and field data monitoring sheets and test questions as well as competitive scorecards for monitoring wetlands' ecological health status, governance issues and threats to the wetlands. It is expected that these two organizations, working with undergraduate students of DFAS-UCC will use these resources to train selected junior and high school students and communities in the Western and Central Regions to monitor the ecological health, governance issues and threats of selected coastal habitats in those regions.
2. DFAS will strengthen the technical and institutional capacities of the two organizations to pursue this outreach educational program and use the curricula to educate and sensitize the select schools and communities for a concerted effort towards ecosystem restoration and conservation of the wetlands
3. Logistical support and related costs will be coordinated jointly by DFAS and the two local organizations.

*In relation to graduate student research projects:*

1. DFAS-UCC will prepare communications that announce available positions for research by DFAS undergraduate students within the wetlands monitoring portfolio
2. DFAS-UCC and the organizations will delineate responsibilities relative to the field research and expected outputs.

*In relation to professional training program:*

1. DFAS-UCC will jointly develop field based practical exercises on relevant coastal zone management issues
2. The two institutions shall develop seminar programs on the research and related outcomes.



## 6.8 Activity 2.2.8: Strengthening Community-based Groups

As a follow-up to work completed in Year 1, Terms of Reference for Year 2 activities were completed in this quarter. It is the intention to use this activity to establish and/or strengthen eight (8) community-based fisheries management programs for the promotion of effective fisheries governance and livelihood security in the beneficiary communities involving the following activities:

- Strengthen the capacity of identified community groups to understand the management structures, regulations, bylaws and rules pertaining to the management of fisheries and coastal resources in general.
- Partner with the community groups, Fisheries Commission and District Assemblies to implement relevant management strategies for sustainable resource exploitation
- Facilitate skills development of the community groups in conflict resolution, advocacy, negotiation, and persuasive communication.
- Provide the trainings above to specific community actors benefiting from the supplementary livelihood programs in snail farming, beekeeping and oyster farming
- Create awareness for behaviour change to enhance coastal resources management using several media platforms and avenues such as local radio programs, communicative bill boards and posters, newspaper, and communicative T-shirts.

### *Expected Outputs:*

- Community-based groups strengthened and better positioned to engage in fisheries management
- CBOs strengthened to support development of coastal communities
- Improved fisheries resources management practices established
- Information gathered disseminated through electronic and print media, publications and dialogues
- Collaborators in the communities engaged
- Training for community members in Sustainable
- Livelihood (SL) activities undertaken.



Meeting with Technical Expert on Supplementary Livelihoods

### **6.9 Activity 2.2.9: Promoting Supplementary Livelihoods in Coastal Communities**

Similar to activity 2.2.8, the PMT reviewed and completed specific TORs that seek to promote supplementary livelihoods among selected community-based fisheries management groups in the Western and Central Regions of Ghana towards realization of the goal of sustainable fisheries as follow:


- Establishment of community-based fisheries management groups as specified in the approved needs assessment report
- Introduce diversification in livelihoods to improve income opportunities and reduce the pressure on natural resources among the community groups
- Train the fishers in black-chinned tilapia and mangrove oyster culture, apiculture (stingless bee culture), and rearing of the African land snail in collaboration with experts from the University of Cape Coast.
- Assist the communities to develop marketing strategies for the harvested products.
- Develop capacity strengthening strategies for realization of the objectives of the community-based groups
- Monitor and evaluate supplementary livelihood outcomes introduced to the fishers
- Disseminate outcomes through publications, electronic media and workshops including inception and close-out workshops.

#### *Expected Outputs:*

- Community-based fisheries management groups in the identified communities fully established
- Livelihoods and income generating opportunities in the communities successfully introduced
- Capacity strengthening in snail farming, apiculture and mangrove oyster culture quantitatively proven
- Supplementary livelihood outcomes introduced to the fishers monitored and evaluated
- Outcomes publicized through publications, print and electronic media
- Inception and close-out workshops for each community organized.
- Pressure on fisheries and other coastal resources reduced

## APPENDICES

### A. FIRST SHIPMENT/ CONSIGNMENT OF FIELD AND LABORATORY EQUIPMENT RECEIVED AT UCC

		COPY		<b>PACKING LIST</b> <b>Page 1/8</b>
24 Low Farm Place • Moulton Park • Northampton • NN3 6HY • United Kingdom Tel (01604) 646495 Fax (01604) 648241 e-mail info@parksscientific.com				
University of Cape Coast Department of Fisheries and Aquatic Sciences Cape Coast Ghana				
Reference : PSQ6605r4				
IDF Number CD201507MOTIIDF10000187091 L/C Number GLC014-150130 Invoice No.: PSL5807/8844 Part Shipment				
Item No	Qty	Code	Product Description	
			<b>Fisheries &amp; Coastal Research Laboratory Equipment</b>	
R7.1	2	MIX5000	Vortex-Genie 2 complete with 3 inch platform and cup head. Variable speed vortex action mixer which offers gentle to vigorous shaking or low to high-speed vortex action. With an automatic start/stop feature for one-handed operation, Quick-Change™ mixing heads snap on and off to accommodate flasks, tubes, beakers, inserts for up to 60 micro centrifuge or micro-tubes and most 96 well plates and a Turbomix attachment dramatically increases vortex efficiency and has particular applications in the cell disruption of yeast, bacteria, plant and animal tissue	
R12.2	6	FB12AM	1.8m x 1.2m Fire Blanket in Rigid Case – Fire Shield. Hard Case for Easy Removal in an Emergency 200g Cloth ensures both flexibility and durability Kite marked to BS EN3 & CE Certified with 5 year Warranty	
R14.1	2	SLS7702	Adjustable Pipettes Fully autoclavable for absolute sterility Lightweight, ergonomic, low force design Display clearly displays the volume setting Easy to calibrate and maintain with tool supplied Calibrated in accordance with ISO8655. Each pipette supplied with an individual test certificate 0.5-10µl	
R14.2	2	SLS7708	Adjustable Pipettes Fully autoclavable for absolute sterility Lightweight, ergonomic, low force design Display clearly displays the volume setting Easy to calibrate and maintain with tool supplied Calibrated in accordance with ISO8655. Each pipette supplied with an individual test certificate 10-100µl	
R14.3	2	SLS7714	Adjustable Pipettes Fully autoclavable for absolute sterility Lightweight, ergonomic, low force design Display clearly displays the volume setting Easy to calibrate and maintain with tool supplied	



**PACKING LIST**

Item No	Qty	Code	Product Description
			Calibrated in accordance with ISO8655. Each pipette supplied with an individual test certificate 100-1000µl
R14.4	2	SLS7718	Adjustable Pipettes Fully autoclavable for absolute sterility Lightweight, ergonomic, low force design Display clearly displays the volume setting Easy to calibrate and maintain with tool supplied Calibrated in accordance with ISO8655. Each pipette supplied with an individual test certificate 1000-5000µl
R14.5	2	SLS7720	Adjustable Pipettes Fully autoclavable for absolute sterility Lightweight, ergonomic, low force design Display clearly displays the volume setting Easy to calibrate and maintain with tool supplied Calibrated in accordance with ISO8655. Each pipette supplied with an individual test certificate 2-10ml
R15.2	3	E0030073061	epT.I.P.S. Box Contamination-free transfer of trays to the working box System optimised for use with multichannel pipettes Colour-coded trays for simple identification of tips and matching Eppendorf pipette Tips can be attached to the pipette from the refill trays Eppendorf Quality tips, refill trays and epT.I.P.S. boxes are entirely autoclavable for future use Volume 2-200µl
R15.3	3	E0030073100	epT.I.P.S. Box Contamination-free transfer of trays to the working box System optimised for use with multichannel pipettes Colour-coded trays for simple identification of tips and matching Eppendorf pipette Tips can be attached to the pipette from the refill trays Eppendorf Quality tips, refill trays and epT.I.P.S. boxes are entirely autoclavable for future use Volume 50-1000µl
R15.4	3	E0030073169	epT.I.P.S. Box Contamination-free transfer of trays to the working box System optimised for use with multichannel pipettes Colour-coded trays for simple identification of tips and matching Eppendorf pipette Tips can be attached to the pipette from the refill trays Eppendorf Quality tips, refill trays and epT.I.P.S. boxes are entirely autoclavable for future use Volume 100-5000µl



Item No	Qty	Code	Product Description
R15.6	4	PIP9456	Pipettor Stands 6 place pipettor stands are designed to hold most major pipettor brands. Upper slots are 25mm wide and the lower slots are 20mm wide.
R22.1	5	SAF3105	Heat Resistant Glove, heat resistant up to 300°C (450°C for short periods) flexible and waterproof. 350mm long with nitrile and cotton lining
R22.3	5	SAF3105	Heat Resistant Gloves Unique glove, heat-resistant up to 300°C(450°C for short periods), flexible and waterproof. 350mm long with a nitrile and cotton lining.
R24.1	1	363401K	Nunc Cryotubes™ Internal Thread Capacity 1.8ml Round Bottom Nunc Internal-Thread Cryotubes now come supplied with a new cap that features an integrated thermoplastic elastomer gasket. Intended for cryogenic transportation and storage of biological material Non toxic, USP, Class VI Non pyrogenic Sterile (SAL10-6) Reclosable zippered bags Catalogue No. and Lot No. are printed on the bags Internal thread, PP with screws Sterile with writing area PK/500
R24.2	1	363452K	Nunc Cryotubes™ Internal Thread Capacity 4.5ml Round Bottom Nunc Internal-Thread Cryotubes now come supplied with a new cap that features an integrated thermoplastic elastomer gasket. Intended for cryogenic transportation and storage of biological material Non toxic, USP, Class VI Non pyrogenic Sterile (SAL10-6) Reclosable zippered bags Catalogue No. and Lot No. are printed on the bags Internal thread, PP with screws Sterile with writing area, PK/300
R28	2	AM14-1	14 in 1 Multi-Purpose Ladder includes Free 2 Work Platforms and 1 Tool Shelf Multipositional hinge system enables it to be easily transformed into many different configurations Lightweight and strong with a load capacity of 150kg. Compact and easy to store. Manufactured to EN131 part 1 and 2 specifications. Easy to assemble, easy to store, easy to transport



Item No	Qty	Code	Product Description
R29.1	1	TRO1106	Trolleys Plastic Shelf 3 Shelves 686 x 1003 x 845mm Integral handles in top shelf. Made from strong polyethylene structural foam shelves. Choice of 2 or 3 shelves. Chrome plated posts. Raised shelf lips to confine spills. Adjustable height on centre shelf. Colour Blue. Maximum capacity 65 Kg per shelf, 180 Kg per unit.
R29.2	1	GAS1202	Gas Cylinder Trolleys For cylinders up to 300mm diameter Manufactured specifically for oxygen cylinders in accordance with BS2718. Cylinders sit on a sheet steel base. Cushioned steel retaining straps with wing nuts secure the cylinders. Anti-static wheels. Front buffers protect adjacent equipment.
R30	6	FUR5366	Kangol Black P.U. chrome chair with gliders and asynchronous backrest with one finger lever adjustment Gas lift Height Range, 560-800mm
<b>Teaching Laboratory Equipment</b>			
T4	15	TIM1030	Stopwatch, Electronic Standard Quartz timer with clear 10mm display, 6-digit readout with one 100th second resolution. 24 hours capacity, split-time facility and full clock functions with alarm. Battery supplied. Key Features: Housed in an impact resistant ABS case this stopwatch is easy to use for timing single events. It is simple to operate having 3 function buttons, Stop/Start, Reset/Split and Mode Selection. Capacity 23hrs, 59mins, and 59secs Resolution: 1/100 sec. for first 30 minutes, 1 second thereafter Accuracy $\pm 0.5$ seconds in 24hrs Power 1.5V button cell battery Dimensions 64 x 53 19mm Weight 60g Supplied with battery (ALR-43) and neck cord
T13	30	TC/SP/AM13	Liroyal Champion Sports Tally Counter Metal handheld tally counter available in 6 colour Counts up to 9999 with a zero clearing device Thumb ring for ease of use Suitable for counting people, traffic or stocktaking WxDxH: 28x42x44mm Weight: 71g
T20.1	6	FUN3004	Buchner funnel With fixed perforated plate. Funnels are glazed

Item No	Qty	Code	Product Description
			on inner and outer surfaces; 150 mL capacity; for filter size of 7 cm
T20.2	5	FUN3008	Buchner funnel With fixed perforated plate. Funnels are glazed on inner and outer surfaces; 510 mL capacity; for filter size of 11 cm
T23.1	3	SLS7714	100.0 to 1000.0 µL Adjustable-Volume Pipettors
T30	40	SAF5604	Disposable gloves Lightly Powdered Latex Examination Gloves "High quality and cost effective, Glove Plus lightly powdered latex examination gloves offer a barrier against blood borne pathogens, whilst the light powder enables easy donning. With a soft, smooth finish, it provides all the comfort the user needs. Supplied in packs of 100."
T31.1	3	353225	Falcon™ Multiwell Cell Culture Plates Reliable growth surfaces assure consistent cell performance. All tissue culture treatments render polystyrene hydrophilic and result in the incorporation of a variety of anionic functional groups that support cell culture. To ensure reproducible results and conditions, all Falcon™ TC treatments are performed in a vacuum chamber. Key features include: Patented labyrinth lid, condensation rings and deep-well design control contamination, reduce evaporation, and minimise edge effects Reliable vacuum-gas plasma tissue culture treatment provides well-to-well and plate-to-plate consistency 12 well Multidish with lid, flat bottom cell, PS, Case of 36
T37	15	SAF0050	Laboratory Coat, Howie "A unisex coat in white polyester cotton, designed to DHSS specifications. The coats have an overlapped, studded front to allow quick removal and give extra protection. All sizes are 1080mm long. We offer size 44 inch - other sizes available at this price"
T39.2	5	BOT1212	Clear glass specimen jar excellent for use with biological and pathological specimens with pp cap; 480ml 33/pack
T43.2	20	PET1008	Anumbra optically clear, flint glass culture dishes that will withstand repeated sterilization(wet or dry); 100 mm diameter, 15 mm depth; 18/pack
T44	2	SAF9600	First Aid Box Eclipse First Aid Kits cover all requirements specified by the British Health Trade Association. Wall mountable with simple and quick release. Dust proof closure and easily





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Item No	Qty	Code	Product Description
			cleaned with a large solid handle.
T45.1	29	MIC2000	Plain microscope slides for general purpose applications. Measure 76 x 26 mm and are 1 mm thick; Quantity: Pack of 50 slides
T45.2	24	MIC3114	Cover Slips 22 x 22 mm square, Thickness No.1 (0.13 to 0.16 mm), pack 200
T49.1	72	CRU2022	Crucible, Porcelain, 10ml, 30mm top OD, 25mm H
T50.1	1	MOR2006	Mortar and Pestle Set, Porcelain; 125ML, 1 pair each
<b>Field Equipment</b>			
F2	1	170	Fibreglass Boat, Bayliner 175BRE, with 135hp Mercruier WPS Engine, 5.36 metre/18ft, Fuel : Petrol.
F3	1	R2-1500EL	Boat Roller/Trailer, suitable for boats up to 18 ft, carrying capacity 1100Kg
F6	2	DA6	<p>Ekman Grab Sampler designed for sampling sediments in lakes, riverbeds and estuarine environments. The basic construction consists of a 316 stainless steel cabinet, which has two spring loaded jaws attached that are released by a triggering mechanism. This is activated by either a messenger when it is being deployed from a rope, or via a special closing mechanism when being deployed using poles (for use when operating in shallow water).</p> <ul style="list-style-type: none"> <li>• Removable mild steel weights are supplied with a painted finish.</li> <li>• A brass messenger is provided.</li> <li>• The dimensions of the cabinet are 150mm x 150mm x 150mm.</li> <li>• The overall size of the grab is 200mm x 200mm x 400mm.</li> <li>• The weight of the grab, including the mild steel weights, is approximately 7kgs.</li> <li>• The effective sampling area is 225cm sq.</li> <li>• Two flaps on the top of the cabinet allow water to pass through during lowering, and close on retrieval to prevent wash-out.</li> <li>• There is an option of a mesh screen over the top of the cabinet (which is removable).</li> <li>• A stainless steel special closing mechanism complete with extending aluminium and fibre glass pole.</li> </ul>
F7	2	DA7	Water Sampler Van Dorn Horizontal 2l complete with Rope and 500g messenger
F8	35	SCW-8	Waders, Chest type, durable waist wader constructed from reinforced PVC material with welded seams. Cleated sole with reinforced toe and heel. Elasticated waist, inside front pocket. Adjustable shoulder straps with quick release



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Item No	Qty	Code	Product Description
			buckles
F9	15	FS8-12	Wellington Boats, rubber,, please state sizes required when ordering
F12	3	SS011096010	Clinometer, Suunto hand-held clinometers are precision instruments used all over the world by surveyors, engineers, cartographers, geologists, miners and architects and many others to measure vertical angles and slopes quickly and easily. PM-5/360 PC : Scales: 0 ± 90°, 0 ± 150 %, conversion table : cosines 0-45 °, optical adjustment for reading
F13	3	DA13	Plankton Net, 300mm diameter, 1000mm mesh length, 100 micron mesh. Complete with cord bridle and 250ml collection bottle
F14	15	BN11050	Binoculars 10x50 binoculars with fully coated optics for all uses including bird watching, astronomy, sports and wildlife. 10 x 50 high power magnification. Comes with case, lens caps, strap, cloth and warranty.
F15	3	DA15	<p>Secchi Disc The Secchi Disc is manufactured in high grade plastic. The round disc, 250mm diameter, has four alternating black and white quadrants. Beneath the disc is a sinker weight of stainless steel</p> <p>The Secchi Disc is equipped with a rope of 5m in length, 5mm in diameter. There are 10 marks in distances of 200mm on the first 2m above the disc.</p> <p>The disc is lowered into the water and a reading of the depth is made by means of the marks on the rope when the disc is no longer visible in the water.</p> <p>It is lowered another 0.5m and then hauled slowly again. The second reading is made when the disc becomes discernible.</p> <p>Now the arithmetical mean from both readings has to be made to determine the visibility depth. The Secchi Disc is manufactured in high grade plastic. The round disc, 250mm diameter, has four alternating black and white quadrants. Beneath the disc is a sinker weight of stainless steel</p> <p>The Secchi Disc is equipped with a rope of 5m in length, 5mm in diameter. There are 10 marks in distances of 200mm on the first 2m above the disc.</p> <p>The disc is lowered into the water and a reading of the depth is made by means of the marks on</p>





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### PACKING LIST

Item No	Qty	Code	Product Description
			the rope when the disc is no longer visible in the water.  It is lowered another 0.5m and then hauled slowly again. The second reading is made when the disc becomes discernible.  Now the arithmetical mean from both readings has to be made to determine the visibility depth.
F24	2	DA24	Core Sampler 0.001m sq Intertidal
F25	1	DA25	Surber Sampler with mesh size of 500 micron
F26.1	2	DA26	Fishing Net Siene 30ft long, 6ft high, 6.5mm mesh, leads and floats every 1ft, no poles provided

**All packed in 1 20ft Container Seal number 0088230**

Total Gross Weight 1600.000kg



## B. SCHOLARSHIP ANNOUNCEMENTS

### **Call for Applications for Scholarships – Doctor of Philosophy (PhD) and Master of Philosophy (MPhil) Degrees for the 2016/2017 Academic Year at the University of Cape Coast**



#### ***Background:***

In support of the Government of Ghana's (GoG) initiatives on food security, the United States Government (USG) through the United States Agency for International Development (USAID) is supporting a five-year capacity building programme for fisheries and coastal management in Ghana. The project contributes to GoG's overall grand fisheries and coastal development programme and USAID's Feed the Future (FtF) Initiative, the USG led global hunger and food security project designed to enhance economic growth in beneficiary countries. In this context, the Department of Fisheries and Aquatic Sciences (DFAS) at the University of Cape Coast is presently leading the USAID Capacity Building Support Programme for the Fisheries and Coastal Management sub-component in collaboration with coastal research institutes at the University of Rhode Island, USA.

#### **(i) Doctor of Philosophy (PhD) Degree**

**Applications are hereby invited from suitably qualified candidates for the award of five (5) full scholarships** to pursue PhD degrees at the Department of Fisheries and Aquatic Sciences of the University of Cape Coast in the following areas:

- *Fisheries Science – One (1) Candidate*
- *Aquaculture – One (1) Candidate*
- *Limnology and Oceanography – One (1) Candidate*
- *Integrated Coastal Zone Management – Two (2) Candidates*

The PhD study will cover a period of three (3) years, beginning the 2016/17 academic year. The scholarships cover tuition, monthly stipends, and field research grants as well as other material and technical support. Successful candidates will spend a maximum of 6 months at the University of Rhode Island in the United States to cover part of their studies.

***General Requirement:*** Applicants must generally qualify for admission into a PhD programme at the University of Cape Coast.

***Specific Requirements:*** In addition, all applicants must satisfy the following specific requirements:

- 1) Must hold a good master's degree (Grade: B+ or A would be an advantage) from a recognized university in a relevant field of study namely:
  - Fisheries Science, Oceanography, Limnology, Aquatic Ecology, Integrated Coastal Zone Management, Coastal Resources Management, Aquaculture, Environmental Science, Environmental Governance, Marine Policy, Conservation Science or Natural Resource Management.
- 2) All candidates must submit:
  - an application letter
  - Curriculum Vitae (CV)
  - Motivation letter
  - Two letters of recommendation
- 3) Successful candidates will be expected to conduct research in one of the following thematic areas in either the Western or Central Region of Ghana. Therefore, all applicants MUST in addition to the above (i.e. 1 & 2), submit a 5-page research proposal on one of the following areas of emphasis:
  - i. **Fisheries Stock Assessment**  
Studies will be conducted to assess the status of commercially important marine fish stocks.
  - ii. **Studies on Marine Fisheries Governance Issues**  
Research in this area would involve a survey and review of various social issues in fishing communities as well as existing adaptive management strategies.
  - iii. **Research on Fish and Shellfish of Commercial Value**  
Research on the coastal tilapia (black-chinned tilapia), shrimps and mangrove oysters would involve growth, reproduction and survival of juveniles and their culture potential.
  - iv. **Analysis of Value Chains of Fish Trade**  
This activity will investigate the different phases of production, processing and marketing of the different commercial fish species in the country. Factors affecting the various stages in the chain will be investigated.
  - v. **Assessment of Biodiversity and Health of Coastal Ecosystems**  
This work will involve examination of aspects of biodiversity of fish, benthic invertebrates, and mangrove communities in lagoons and estuaries to establish the scientific basis for future monitoring in view of the ongoing offshore oil and gas exploration and production. Aquatic environmental

factors, occurrence of algal blooms and invasive species will also be investigated.

- 4) In addition to all of the above (1-3), all candidates seeking for scholarships must separately apply for admission to **one** of the **four** academic programmes offered in the Department and **MUST** meet the admission requirements of the University of Cape Coast.

**(ii) Master of Philosophy (MPhil) Degree**

**Applications are invited from suitably qualified candidates for the award of five (5) full scholarships tenable at the University of Cape Coast.** The Master of Philosophy Degree study will cover a period of two academic years beginning 2016/17 academic year. The scholarships cover tuition, monthly stipends, and field research grants as well as other material and technical support to successful candidates to pursue any of the following programmes of study:

- Fisheries Science
- Integrated Coastal Zone Management
- Oceanography and Limnology
- Aquaculture

**Requirements:**

- i. Applicants must generally qualify for admission to masters' programme at the University of Cape Coast. In addition, all applicants must satisfy the following specific requirements/prerequisites:
- ii. Must hold a Bachelors' degree preferably Second Class Honours (Upper Division) from a recognized university in a relevant field of study notably Fisheries and Aquatic Sciences, Integrated Coastal Zone Management, Coastal Resources Management, Aquaculture, Environmental Science, Environmental Governance, Marine Policy, Conservation Science, Natural Resource Management among others.
- iii. All candidates must submit the following:
  - An application letter
  - Curriculum Vitae (CV)
  - Motivation letter
  - Two letters of recommendation

**Contact:**

Only shortlisted applicants will be invited for an interview after the closing date. Females are particularly encouraged to apply.

All applications must be delivered by regular mail/ courier to:

*The Project Manager  
USAID/UCC Fisheries and Coastal Management Capacity Building Support  
Project  
Department of Fisheries and Aquatic Sciences  
School of Biological Sciences  
University of Cape Coast, Cape Coast  
GHANA*

**Deadline:** 31<sup>st</sup> March, 2016.

**Funding Agency:** United States Agency for International Development (USAID)