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# SUSTAINABLE FISHERIES MANAGEMENT PROJECT (SFMP)

## Training on Oyster Culture and Establishment of Oyster Reef Enhancement



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THE  
UNIVERSITY  
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Development  
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**Cover photo:** Members of DOPA preparing to replant oyster shells in the Densu Delta in the implementation of the Densu Delta management plan (Credit: Development Action Association)

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## **ACRONYMS**

DAA	Development Action Association
DOPA	Densu Oyster Pickers Association
MOFAD	Ministry of Fisheries and Aquaculture Development
OBET	Oyster Biology and Ecology Training
SFMP	Sustainable Fisheries Management Project
USAID	United States Agency for International Development

## CONTENTS

ACRONYMS .....	iii
LIST OF FIGURES .....	iv
LIST OF TABLES .....	iv
ACKNOWLEDGEMENTS .....	v
1. INTRODUCTION .....	1
1.1 Training Objectives.....	1
1.2 Expected outcomes .....	1
1.3 Training Methodology .....	1
2. TRAINING DELIVERY .....	2
2.1 Oyster Ecology.....	4
2.2 Oyster Biology .....	4
2.3 Estuarine Dynamics .....	5
3. SHELL REPLANTING .....	7
3.1 The Importance of Oyster Shell Planting.....	7
4. CONCLUSIONS .....	10
5. ANNEX.....	11

## LIST OF FIGURES

Figure 1. Sheila Fynn Korsah (standing in front & in red) the lead facilitator with Bernice Beble (standing in rear & grey) being the main interpreter during the training .....	2
Figure 2. Mr Abraham Asare of DAA welcoming the participants to the training .....	2
Figure 3. Madam Olivia Horvey, the zonal Fisheries Commission Officer instructing participants during the training session.....	3
Figure 4. Sheila Fynn Korsah demonstrating at the training .....	3
Figure 5. Participants engaged in a group exercise during the one-day training.....	3
Figure 6. Participants in a group exercise during the one-day training .....	4
Figure 7. Participants going through the various biological stages of oyster development .....	4
Figure 8. Oyster feeding cycle depicted in an illustration .....	5
Figure 9. Beneficiaries of the training undergoing a practical group session on measuring physio parameters .....	6
Figure 10. Members of DOPA preparing and bagging oyster shells for replanting in the Densu Delta as a means of boosting oyster growth .....	7
Figure 11. Participants carrying oyster shells to the landing site readying for replanting.....	7
Figure 12. Bagged oyster shells in boats ready for replanting.....	8
Figure 13. Members of DOPA replanting oyster shell into the Densu Delta to boost oyster growth .....	8
Figure 14. Participants in a group discussion in problem solving during the training .....	9

## LIST OF TABLES

Table 1. Basic estuarine conditions and their basic meaning .....	5
Table 2. Program Outline.....	11

## **ACKNOWLEDGEMENTS**

The DAA Fisheries Training Center and the entire staff of DAA acknowledge the contribution of University of Cape Coast-Department of Fisheries and Aquatic Sciences for assistance with a facilitator.

## **1. INTRODUCTION**

The Densu Oyster Pickers Association -DOPA with the assistance of Development Action Association - DAA under the Sustainable Fisheries Management Project has drafted a fisheries management plan to guide the sustainable exploitation of the oyster resources in the Densu Delta.

Though the plan is still in its draft stage awaiting adoption by the Ministry of Fisheries and Aquaculture Development (MoFAD), the Densu resource users have started implementing some management measures in the draft plan. These measures are to ensure a sustainable exploitation of the oyster resource in the estuary and include:

- back-to-back closure of the Densu Delta for five months for all oyster harvesting activities,
- the replanting of more than 20,000 seedlings of red mangroves covering several acres of depleted mangrove landscape,
- the replanting of harvested oyster shells to boost spat settlement and
- the formation of a registered association (DOPA) to regulate the harvesting effort levels.

In line with building the capacity of the DOPA members to be able to implement and monitor these management measures, a one-day refresher training was organized on the 20<sup>th</sup> December 2018 at the DFTC in Kokrobite and the Densu Delta for 42 members (36 females, 6 males) of DOPA in oyster biology & ecology, natural resource conservation, mangrove replanting & conservation and oyster shell replanting.

### **1.1 Training Objectives**

The objectives of the training were to help members of DOPA:

- Understand what is meant by oyster biology and ecology.
- Demonstrate knowledge on how oysters reproduce, feed, excrete and grow.
- Understand estuarine dynamics and their impact on the growth of oysters.
- Understand natural resource management and conservation benefits.

### **1.2 Expected outcomes**

At the end of the one-day training, beneficiaries were expected to:

- Demonstrate knowledge on oyster biology and ecology concepts and their link to oyster sustainability.
- Demonstrate basic understanding of natural resource conservation and how they relate to oyster sustainability.
- Explain basic scientific terminology relating to water quality parameters critical for oyster growth and development.

### **1.3 Training Methodology**

The training methodology was mainly a classroom room style, role plays and discussions. Key was the practical demonstration of know ledge at the end of each session as a means of evaluation.

## 2. TRAINING DELIVERY

The one-day training was attended by 42 (36 males, 6 females) members of the Densu Delta Pickers Association (DOPA) from Tetegu, Tsokomey and Bortainor all in the Ga South Municipal Assembly of the Greater Accra Region of Ghana on the 20<sup>th</sup> December 2018.

The training was held at the DAA Fisheries Training Center (DFTC) at Kokrobite and continued at the Densu Delta for the practical demonstration on the oyster shell replanting.

The training was facilitated by Shiela Fynn- Korsah of the Department of Fisheries and Aquatic Science – University of Cape Coast with support from Abraham Asare (Development Action Association), Olivia Horvey (the zonal Fisheries Commission officer for Ga South) and Ibrahim Fuseni (a community liaison for DAA).

The beneficiaries were taken through lessons on oyster biology and ecology, natural resource conservation, mangrove replanting and conservation and oyster shell replanting. The training sessions were held in multi-languages including English, Twi, Ewe and Ga with language interpretation coming from Madam Bernice Bebli, a member of the group.



**Figure 1. Sheila Fynn Korsah (standing in front & in red) the lead facilitator with Bernice Beble (standing in rear & grey) being the main interpreter during the training**



**Figure 2. Mr Abraham Asare of DAA welcoming the participants to the training**





**Figure 3. Madam Olivia Horvey, the zonal Fisheries Commission Officer instructing participants during the training session**



**Figure 4. Sheila Fynn Korsah demonstrating at the training**



**Figure 5. Participants engaged in a group exercise during the one-day training**

## 2.1 Oyster Ecology

According to the facilitator, oysters live in a lagoon or an estuary, they like sandy bottoms (hard or semi hard substrates), on the roots of mangroves and rocks. Oysters cannot survive in purely sandy or muddy bottoms.

She explained the extensively the ecology of oysters and their habitat so that participants who are pickers will be mindful of their activities and not cause damage to the oyster habitat. According to the facilitator, any fish which is enclosed in shells is referred to as a shellfish. She gave examples as oysters and crabs. She explained the term “bivalve” as any shellfish which has shells of two halves.



**Figure 6. Participants in a group exercise during the one-day training**

## 2.2 Oyster Biology

The facilitator took participants through the biological cycle of oyster which includes the reproduction, feeding, respiration and excretion.

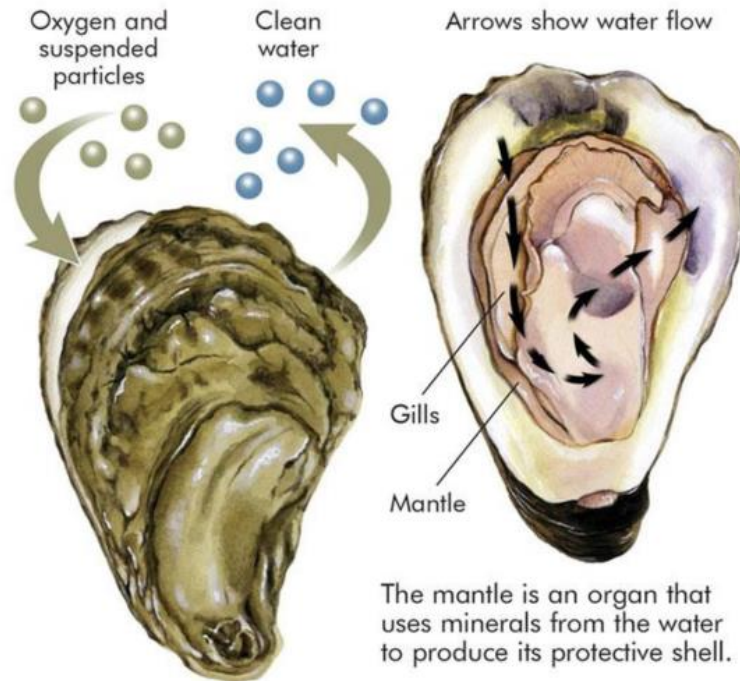
She clarified the “myth” that, the mud and sand mix up to form oysters. She explained that, just like human beings, oysters are biological or living things and go through similar biological cycle; the male oysters need to produce sperms to fertilize the eggs produced by the female ones.



**Figure 7. Participants going through the various biological stages of oyster development**

The facilitator guided the trainees to identify a male oyster from a female oyster during the reproduction period. A male oyster is determined by its sticky liquid content released when pierced, while the female oyster is determined by a yellowish liquid content which flows easily when pierced.

According to her, oysters feed on phytoplankton and demonstrated using live oysters to show how they feed, their mode of respiration and excretion.



**Figure 8. Oyster feeding cycle depicted in an illustration**

(photo credit: blogs@NTU)

### 2.3 Estuarine Dynamics

According to the facilitator, certain ecological factors must be present in the estuary before oysters can thrive. She emphasized that, the growth of oysters is dependent on specific ecological conditions that ensures healthy population growth. This is the point in the estuary where salty water mixes with fresh water.

Like humans, oysters depend on environmental factors in estuarine system for survival. Each of these important estuarine factors were explained for participants to understand how they can be measured them. These factors included the turbidity, salinity, dissolved oxygen, temperature, tide and PH.

**Table 1. Basic estuarine conditions and their basic meaning**

No.	Estuarine Condition (Factors)	Basic Meaning
1	Turbidity	Checking how dirty or clean the water body is
2	Salinity	Measurement of salt content in the water.
3	Dissolved oxygen	Measurement of oxygen in water.
4	Temperature	The degree of hotness or coldness of the water
5	PH	The measurement of either the water is acidic or base.
6	Tide	The alternate rising and falling of the sea is.

The facilitator impressed on beneficiaries that human activities can either affect negatively or positively the oyster resources in the estuary. With this in mind, participants were advised to change their behavior for sustained oyster harvesting.

Participants also had a brief practical training on physio chemical parameter monitoring. The facilitator demonstrated how the estuarine environmental factors are measured. Participants performed a group exercise to further understand.



**Figure 9. Beneficiaries of the training undergoing a practical group session on measuring physio parameters**

### 3. SHELL REPLANTING

#### 3.1 The Importance of Oyster Shell Planting

According to the facilitator, oyster shells have been identified as one of the favorites substances for oyster growth as a substrate. To fulfil one of the key management measures, the DOPA members received practical training on how to re-populate the estuary with empty shells as a means of boosting oyster growth in the Densu Delta.

The facilitator demonstrated to the participants the proper care of oyster shells and where to plant them in the estuary.



**Figure 10. Members of DOPA preparing and bagging oyster shells for replanting in the Densu Delta as a means of boosting oyster growth**

Members of Densu Oyster Pickers Association donated 50% of the shells from their harvested oysters into two established oyster shell dumping sites in the Tsokomey community.



**Figure 11. Participants carrying oyster shells to the landing site readying for replanting**

The participants were shown management means and were asked to suggest other ways the resources can be managed.



**Figure 12. Bagged oyster shells in boats ready for replanting**



**Figure 13. Members of DOPA replanting oyster shell into the Densu Delta to boost oyster growth**

The participants agreed that stringent measures should be instituted and enforced in the management of the resource.

The participants demonstrated the benefits of working in teams to achieve an objective by undertaking a group exercise .



**Figure 14. Participants in a group discussion in problem solving during the training**

#### **4. CONCLUSIONS**

The one-day training was very insightful for the participants as it afforded them the opportunity to understand the need for them to properly manage the estuary for future generations.

The facilitator also allowed the participants to contribute their traditional knowledge on every topic. Participants were very impressed with the training and gave useful feedback.

All agreed that it will be prudent to capitalize on the commitment of the DAA Oyster Group to implement actions on the oyster management plan.



## ANNEX 1. TRAINING AGENDA

### Development Action Association – DAA SFMP - OYSTER COMMUNITY BASED COMANAGEMENT (CBCM) - DENSU ESTUARY

One-day Refresher Training on Oyster Culture and Establishment of Oyster Reef enhancement in Tsokomey/Bortianor and Tetegu all in Greater Accra oyster for DOPA Members

**Date:** 20<sup>th</sup> December 2018 **Venue:** Kokrobite & Tsokomey **Time:** 8.30am – 06.00pm

*Table 2. Program Outline*

<b>Time</b>	<b>Activity</b>	<b>Who</b>
7.45 – 8.30am	Arrival and Registration	DOPA
	SESSION A – Class Room Setup	
08.30 – 08.45am	Welcome, Purpose of Gathering	Lydia Sasu/Abraham Asare
08.45 – 9.45am	Oyster Biology and Ecology – Part 1	Sheila Fyn-Korsah
09.45 – 10.00am	Snack Break	DOPA
10.00 – 11.00am	Oyster Biology and Ecology – Part 2	Sheila Fyn-Korsah
11.00 – 11.15am	Ice Breaker	DOPA/Abraham Asare
11.15 – 12.30pm	Wetland/Estuary Fishery Conservation - Video Presentations of good practices	Abraham Asare
12.30 – 01.00pm	Lunch Break	DOPA
01.00 – 01.30pm	Shell Replanting – Why ?	Sheila Fyn-Korsah
	SESSION B – Densu Delta	
01.30 – 3.30pm	Spreading & Planting of Oyster Shells as a Management measure Implementation	Sheila Fyn-Korsah Abraham Asare
3.30	Closure and Departure	