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WOMEN SHELLFISHERS AND FOOD SECURITY

Progress and Results of Mangrove Replanting in Year 1 and Year 2 in the Densu Estuary, Ghana (DAA Extension Milestone #6)



MAY 2024

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Cover photo: A group of oyster pickers transporting nursery raised mangrove seedlings for outplanting, Densu, Ghana.

Photo credit: Promise Hunya, Densu Oyster Pickers Association (DOPA)

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ACRONYMS

| | |
|-------|--|
| CCM | Centre for Coastal Management |
| CRC | Coastal Resources Center |
| DAA | Development Action Association |
| DOPA | Densu Oyster Pickers Association |
| GMT | Greenwich Mean Time |
| ICRAF | World Agroforestry (International Centre for Research in Agroforestry) |
| TRY | TRY Oyster Women's Association |
| UCC | University of Cape Coast |
| URI | The University of Rhode Island |
| USAID | United States Agency for International Development |

1. INTRODUCTION

1.1 Activity Background

This Women Shellfishers and Food Security Activity (hereinafter referred to as the “Activity”) seeks to address the need for greater attention to food security for women shellfishers and their families while improving biodiversity conservation of the ecosystems on which their livelihoods depend. Based on accomplishments and lessons learned in the first two-year period of the project, a three-year Activity extension was approved on September 9, 2022.

The key project components (USAID 2022) of the extension are: The Activity goal is as follows:

“Foster the adoption and scaling-up of an integrated approach to conservation and restoration of mangrove and estuarine ecosystems in West Africa that provides cross- sectoral benefits in terms of gender equality and women’s empowerment, economic development, and household food resiliency.” (USAID 2022)

The initial two-year phase of the Activity demonstrated that drivers and threats to mangrove and estuarine ecosystems are complex, degradation in some ecosystems is already significant, and the full range of management options including both conservation and restoration need to be considered to influence mangrove and estuarine health.

The objectives of the three-year extension are:

Extension Objective 1: Demonstrate the biodiversity and socio-economic value of more fully integrated rights-based co-management of linked shellfish - mangrove - proximate landscape food ecosystems in two countries in West Africa: Ghana and The Gambia.

Extension Objective 2: A functional West Africa Shellfish Knowledge and Outreach Hub.

This report documents site-based work under Objective 1 in the Densu delta in Ghana on mangrove replanting and its related activities such as community sensitization, training on mangrove nursery establishment, transplanting of mangrove seedlings and follow-up monitoring and care in Year 1 and the first 8 months of Year 2, including the status of these activities as of May 2024.

2. METHODOLOGY

2.1 Community sensitization

On the 16th of January 2023, DAA held a community sensitization meeting at Tsokomey to inform the members of DOPA in the three communities (Tsokomey, Bortianor, and Tetegu) of the Women Shellfishers and Food Security project. The activities to be carried out of which mangrove restoration is a major activity of the project were made known to the participants. DOPA members and other stakeholders present Gladly accepted the news and idea of the mangrove restoration activity and pledged the total support for it, having understood the importance and benefits of the restoration activity.



Figure 1: Mangrove replanting sensitization at Tsokomey

2.2 Training and mangrove nursery establishment

DAA organized a one-day training for 40 DOPA members (6 men and 34 women) in February 2023 at Tsokomey with a mangrove expert to equip DOPA members with the requisite knowledge and skills on this activity. DAA organized the same training for another 40 DOPA members in December 2023. The trainings took place about the time of the mangrove nursery establishment for each year. The Year 1 nursery was done in February 2023 but that of Year 2 in December 2023 because the Year 2 planting was intended to happen in the early months of 2024 in order to avoid the spilling time of the Weija dam.

The training objectives were:

- i. To train participants on mangrove nursery establishment
- ii. To educate participants on the importance of mangroves in our environment.

The training was in two sessions, theory and practical (Figure 2). The theoretical session outlined the importance, threats, conservation needs, and nursery establishment. The practical session dealt with the actual nursery establishment in the field, where the facilitator guided participants in the filling and arrangement of polypots, the right way to nurse the mangrove propagules in polypots, and the best cultural practices in the nursery.



Figure 2: Mangrove nursery establishment training at Tsokomey.

The table below provides a summary of the number of red mangrove (*Rhizophora mangle*) seedlings raised and planted in 2023 and 2024.

Table 1: Summary of mangrove seedlings planted and areas in 2023 and 2024 at Densu Delta.

| Year | Number of seedlings raised (number of propagules nursed at beginning of the nursery) | Number of seedlings planted (number of seedlings survived in the nursery at transplanting) | Number of propagules planted directly (propagules leftt after nursery due to unavailable nursery space) | Area of land covered |
|------|--|--|---|----------------------|
| 2023 | 4800 | 4500 | 0 | 12.4 ha |
| 2024 | 7813 | 6962 | 1500 | 15.7 ha |

From the above table, 4800 seedlings were raised and 4500 mangrove seedlings were transplanted on 12.4 ha of land in 2023. In 2024, 7813 seedlings were raised but 6962 were transplanted on 15.7 ha of land due to nursery mortality. The Year 2 nursery may have recorded more mortality due to high quantities of propogules and some areas of the nursery not receiving adequate water. In Year 2, the 1500 propagules were planted directly on the field due to lack of space in the nursery area. The nursery period for 2023 lasted for 2 months, 2 weeks (from 7th February-17th April, 2023) with intensive watering, while that of 2024 started earlier based on lessons learned from 2023 to allow seedlings to be planted earlier and be

more established by the time of rains and flooding (including releases of water from the Weija Dam). The 2024 nursery period lasted for 2 months, 18 days (from 10th November, 2023-28th January, 2024).

The nursery land was acquired by rent for each year. The nursery was managed by 10 DOPA members (3 from Bortianor and 7 from Tsokomey) who did watering every morning and evening daily, controlled weeds for the nursery period, and were compensated on weekly basis.



Figure 3: Construction of nursery shed.



Figure 3: Mangrove nursery establishment.



Figure 4: watering mangrove seedlings.

2.3 Transplanting of mangrove seedlings

The 2023 mangrove seedlings were transplanted on the 17th and 18th April 2023. A total of 4500 seedlings were transplanted as already indicated above. The 2024 transplanting was done on the 29th and 30th January 2024. The direct planting was done on the 28th of November 2023. The planting area for Year 1 was chosen because DOPA wanted to continue from where USAID Sustainable Fisheries Management Project (SFMP) mangrove planting ended. With that objective, the Year 1 planting spanned 1 meter from the riverbank to further away with spacing 2-3 meters apart. However, the 2024 (Year 2) planting was done mainly along the riverbank in order to attract oyster attachment to the mangrove roots. The planting

activities were mostly done during the low tides. The mangrove seedlings are planted about 15-20cm deep in the soil.

The planting was done by DOPA members and some brush park fishers on a voluntary basis. About a week or two to the planting, DOPA executives meet to plan how to go about the planting and the final agreement was also informed by the rest of the members in the various communities. Three days to the planting, daily general announcements were made in the three communities through the community information centres to keep DOPA members reminded. In Year 1, 146 DOPA and brush park members were involved in the planting while 106 members took part in the planting in Year 2. Though the participation was voluntary, the Women Shellfishers and Food Security project supported with provision of lunch and the hiring of boats and planting equipment.



Figure 5: Transplanting of Mangrove Seedlings.



Figure 6: Direct planting of mangrove propagules.

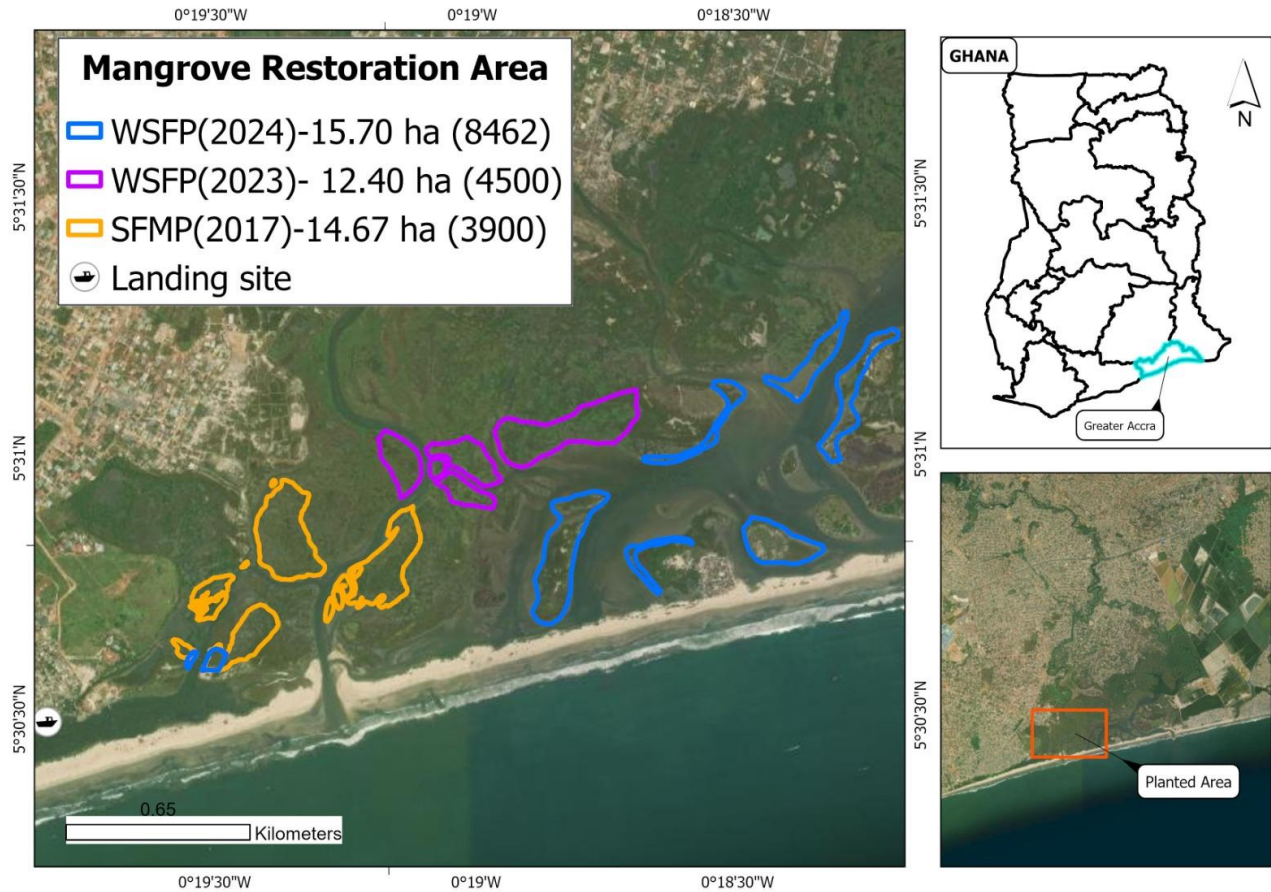


Figure 7: Map of mangrove planted areas.

2.4 Post planting visit to planted areas with community members

After the 2023 mangrove transplanting in April, DAA organized a one-day field visit to the mangrove planted area for the community members and other stakeholders on the 25th of September 2023. The main objective of the visit was to see how the mangroves planted are performing and to appreciate the role of DOPA in the restoration of mangroves in the Densu delta. The visit was also to create a platform for both DOPA and stakeholders to discuss observations made in the field and share ideas on how to make things better subsequently with regard to mangroves restoration and related issues. Stakeholders from the Fisheries Commission, the traditional authorities, ICRAF, and UCC were present. A total of 159 attended. Upon getting to the field, all stakeholders were impressed with the work DOPA had done and congratulated them for that work.

One key issue raised by a participant was the encroachment of the land by people. It was discovered that the part of the land being encroached belongs to another community (Aplaku), which falls between Bortianor and Tetegu. After deliberations among the stakeholders, it was concluded that, going forward, Aplaku should be included in any stakeholder engagement with regards to the Densu delta.

Some DOPA members also raised concerns about the timing of the oyster closed and open seasons. According to them, the open season usually coincides with Weija dam spillage which sometimes does not

allow them to harvest oysters. They requested UCC as their main technical partner to consider the scientific evidence that is the basis for the current timing of open and closed seasons again. Dr. Isaac Okyere of UCC assured them that will be looked at and see if the closed season would be during the dam spillage and open season otherwise.



Figure 8: Participants in the mangrove field visit to Densu Delta.

2.4 Coordination with ICRAF and UCC on mangrove management and biodiversity studies in replanted areas

DAA played a supporting role to UCC during a biodiversity study in the mangrove replanted areas at the Densu estuary on the 18th and 19th of January 2024. The results of this study will be documented in a separate UCC report.



Figure 9: Biodiversity Survey by UCC at the mangrove replanted areas at Densu Delta.

3. LESSONS LEARNED

One major lesson learned was the timing for the mangrove nursery and transplanting at the Densu estuary. The usual planting time used to be in the month of May/June. However, it was realized that the spillage of the Weija dam also usually occurs around the same time, causing most of the recently planted seedlings to die. To avoid such occurrence, the nursery period for seedlings was shifted earlier, between November 2023 and February 2024, in preparation for the 2024, planting. This allowed for the transplanted seedlings to be established before the opening of the Weija dam.

The apparent higher mortality rate in Year 2 was likely due to the high quantities of propagules inside the nursery area which caused some parts of the nursery to receive inadequate water. Also, there were not mangroves propagules available for replacement of dead ones in the nursery as in the case of Year 1. In future nursery establishment, the volumes and the available space for mangrove nursing will be considered for better survival rates.

The direct planting of the mangrove propagules became necessary when there was no more space for nursery. However, the direct field mangrove planting turned out to be easier, faster and cheaper in terms of transporting, handling and planting time on the field compared to nursed seedling as learned in 2024.

Mangrove planted by DOPA are less susceptible to cutting unlike the wild mangrove because their species can be easily distinguished from wild species and local social norms recognize that mangroves planted by DOPA are protected by co-management principles.

Due to DOPA mangrove restoration activities, the brush park fishers are gradually shifting from the indiscriminate cutting of the wild mangrove to a controlled cutting. They are also shifting to the use of different materials other than mangrove. Last year, they planted some white mangrove and in 2024, they joined DOPA in planting the mangrove.

Finally, to engage people in these activities, their time must be compensated for, and this can be in different forms.

4. CONCLUSION:

Both the 2023 and 2024 mangroves planted are doing very well. The brush park fishers have now agreed to collaborate in the future mangrove restoration in the Densu delta.

5. REFERENCE CITED:

Mangrove Planting Best Practices: Training Workshop, The Women Shellfishers & Food Security Project
09/05/2023.

https://docs.google.com/presentation/d/1tCKzVRxOsBoT0kj-fYfhI_qq894rTjxi/edit#slide=id.p1

6. APPENDIX: ADDITIONAL PHOTOS



Figure 10: Brush park fishers offloading alternative (non-mangrove) materials from other places.



Figure 11: Photo showing a scenario of red mangrove (left) untouched and white mangrove (right) cut.