



UWI Solutions for Developing Countries: Restoring mangroves in Clarendon – A new approach.

The Problem: We have lost almost half the mangroves along the coast of Clarendon. Their loss exposes the people who reside near the coast as well as all coastal infrastructure to the full force of storm surges during hurricanes with consequent loss of life, destruction of property, and lasting damage to agricultural lands. Dead mangroves also cannot support the important nursery function for juvenile fish leading to a reduced catch of fish for your tables. There are in fact a myriad other valuable services that the mangroves provide that are also lost when they die including, filtration of water that helps sustain the health and growth of sea grass beds and coral reefs where fish and other plants and animals feed and live; reducing impact of flood waters; carbon sequestration that mitigates climate change and maintaining biodiversity, to name a few.

There are >3500 hectares of mangroves stretching along the coast between Milk River and Salt River in Clarendon. Of these >1600 hectares are dead; they died from a combination of causes. These include impacts from extreme weather events that: i. changed the configuration of the shoreline along great stretches of the coast interfering with tidal flushing, the back and forth flow of sea water

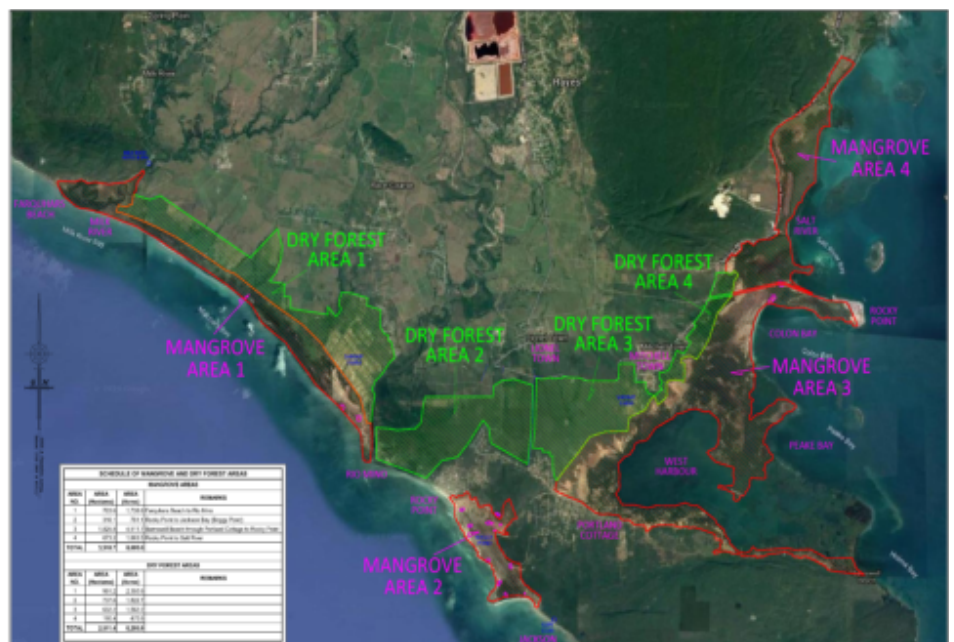


Image 1 -Map of Mangrove Forests in Clarendon Subject of UWI SODECO Restoration Programme

into the system; ii. blocked the flow of water by depositing sand along the length of water channels, leading to the stagnation of water that can kill or severely degrade the health of the mangroves. iii. There has also been reduction in the flow of freshwater from the land side coming from the runoff of agricultural irrigation. Impact of human activity on the mangroves has also contributed to some of the die-off. For example, construction of transportation infrastructure such as roads and railway lines across mangroves that interfere with the flow of water through the mangroves so vital to their survival and health water flow. Lastly, there is direct destruction of mangroves from the cutting down of mangrove trees to produce charcoal or use as building material etc. Mass die off of mangroves severely impairs the mangroves' capacity to deliver ecosystems services such as marine nurseries that support fisheries, appropriate nutrient flows to sea grass beds and coral reefs that sustain healthy coasts, coastal protection from extreme weather events, plus carbon sequestration to reduce greenhouse gas impact climate change.

The Solution: There are solutions to this problem which can reverse the damage that has been done to the system. Solutions require a strategic and systematic approach that is scientific and results based for successful regeneration of the area. UWI SODECO in association with international and local partners such as the Inter-American Development Bank (IDB), the United Kingdom Government, Sugar Company of Jamaica Holdings Ltd, Jamalco, and communities in southern Clarendon, has embarked on a program to restore, conserve and manage >3500 ha plus >2500 ha Dry Forest adjoining the mangroves that stretches along some 40km of coastline between Milk River in the west and Salt River/Cockpit in the east. The solutions involve:



Image 2 –Degraded mangrove forest in south Clarendon Subject of UWI SODECO Restoration Programme



Image 3 –Degraded mangrove forest in south Clarendon Subject of UWI SODECO Restoration Programme

1. Assessing the conditions and characteristics of the Clarendon mangrove system to understand how the system works and what exactly has happened that altered how it currently functions. Hence a comprehensive and scientifically-based site characterization and assessment has been undertaken that has determined the goods, services and assets of the system, and identified the factors that have negatively impacted the functions of the mangroves. The report from this assessment outlines the possible solutions to reverse the degradation which involves a natural regeneration approach that helps the system heal itself by removal of the stressors that negatively impact the system – a nature-based approach to regeneration.

2. Implementation of the regeneration actions that will restore the damaged areas to full functionality once again.

The intervention actions themselves will kick off in December 2022. Between now and when the first shovel is raised we will be continuing to effect all the necessary preliminary works and arrangements including in-depth community and stakeholder engagements and co creation of solutions.



Image 4- Restoration of hydrological flows across a roadway with the use of a culvert at a pilot site for the restoration of mangrove forests in south Clarendon, Jamaica

3.. We have already started the monitoring of the status of these mangroves, and the monitoring will be intensified and broadened in order to track conditions for regeneration as well as progressive regrowth of mangroves starting. Monitoring will be indefinite, allowing us to mount interventions whenever needed to maintain the health of the forest into the future.



Image 5 - Spatial mapping being carried out as a part of the baseline assessments of mangrove forests in south Clarendon, Jamaica



Image 6 - Marine faunal assessments being carried out as a part of the baseline assessments of mangrove forests in south Clarendon, Jamaica

4. Operating this site as a UWI SODECO scientific research domain designed to support programmed scientific and socio-economic research and applications that interact to drive innovation, as well as improving livelihoods within the area. This is the foundation of what is referred to as a Blue Economy.

What is UWI SODECO?

UWI SODECO is an international research charity of The University of the West Indies whose headquarters is located on the UWI Mona Campus in Jamaica. It is comprised of two divisions; Solutions for Medicine (SFM) which focuses on medical research to enhance human resilience through direct biological interventions; and Solutions for Society (SFS) which is oriented towards solving socio-economic problems such as restoring these dead mangroves in south Clarendon. UWI SODECO is international in its outlook, strategies, networking and operations and leverages its global network to focus on research priorities in developing and poor countries in order



Image 7- Marine faunal assessments being carried out as a part of the baseline assessments of mangrove forests in south Clarendon, Jamaica

to inform better treatments for major health problems, as well as providing solutions to socio-economic problems. Mangrove restoration falls in the purview of the latter focus.



Image 8 – Terrestrial and faunal assessments being carried out as a part of the baseline assessments of mangrove forests in south Clarendon, Jamaica



Image 9- community engagement and local knowledge sharing for the baseline assessments of mangrove forests in south Clarendon, Jamaica



Image 10- UWI SODECO Consultants and Community Field Guides during the carbon stock assessments as a part of the baseline assessments of mangrove forests in south Clarendon, Jamaica

UWI SODECO Governance

UWI SODECO is governed by a board which is chaired by the UWI Vice Chancellor or his designate.

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The Mangrove Restoration Team: The UWI SODECO SFS technical team for this mangrove restoration programme is joined by key collaborators including, Departments of Life Sciences, UWI Mona and St. Augustine; Institute of Marine Affairs, Trinidad and Tobago; Engineering Department, University of California San Diego, USA; Engineering Department, University of Maryland, College Park. This grouping has the requisite experience and technical depth to manage this restoration project.