

Restoring our wetlands - NGC embarks on new mangrove rehabilitation project

Caroni Swamp, Trinidad and Tobago

In the quiet evening of the Caroni Swamp, against the canvas of a sunset sky, hundreds of scarlet ibis make for home from across the Gulf of Paria, settling atop the stilted mangroves like red blossoms. Flat-bottomed boats glide across the water, ferrying mesmerised visitors through and past, to witness this daily spectacle in the company of trilling insects and more reclusive wetland creatures.

For many years, through boat tours of the west-coast Caroni Swamp, locals and tourists alike have experienced in microcosm the beauty and biodiversity of Trinidad and Tobago's mangrove forests, which grow in wetland or coastal intertidal zones. Although popularised as a bird sanctuary, the mangroves of the Caroni wetlands — and others around the country — are a productive habitat for many marine and freshwater species of flora and fauna. However, these ecosystems do more than just house a menagerie of life. They provide valuable geographical, socioeconomic and climate change mitigation services. Unfortunately, mangrove wetlands are being lost or degraded due to urbanisation, agriculture, pollution and other factors linked to land use and settlement.

In recognition of the need to preserve mangrove coverage in Trinidad and Tobago, NGC is embarking on a landmark project with the Institute of Marine Affairs (IMA) to rehabilitate wetlands along the west coast of Trinidad, in the vicinity of Couva/Point Lisas. This area is being targeted because of significant mangrove dieback in these wetlands - identified by IMA studies - and its adjacency to the Point Lisas Industrial Estate, parts of which occupy lands that were formerly covered by mangrove forest.

WHY MANGROVES?

Since 2005, NGC has been investing in restoration of local forest cover, largely through its signature 315-hectare reforestation programme. The aim of that initiative was to replant acreage cleared

during NGC's pipeline construction activities, building natural carbon sinks and terrestrial habitats in the process.

Upon conclusion of this project in 2023, NGC began to explore options to extract even greater value from national forests through a sequel project called 'Beyond 315'. Under this new project, in addition to agroforestry and eco-tourism initiatives, NGC has decided to focus on mangrove restoration, for several reasons.

Ecology

Mangrove forests are vibrant ecosystems teeming with life. The cavernous root systems of mangroves serve as fertile breeding grounds for fish, shrimp, clams and crabs. Globally, over 1,500 species depend on mangroves for their survival, with as many as 15 per cent of these facing threat of extinction.¹

IN TRINIDAD AND TOBAGO, THE CARONI SWAMP ALONE IS HOME TO 190 SPECIES OF BIRDS, INCLUDING 20 ENDANGERED SPECIES.²

Restoration of mangrove forest is key to preserving these vital and versatile habitats, and ensuring the survival of all species that depend on them for shelter and food.

Economics

The value of ecosystem services is difficult to quantify.

HOWEVER, IT IS ESTIMATED THAT MANGROVES PROVIDE AROUND US\$33-57 THOUSAND PER HECTARE PER YEAR TO THE NATIONAL ECONOMIES OF DEVELOPING COUNTRIES WITH MANGROVES.³

A significant share of that value is generated from economic activity linked to fishing. Locally, fish and shellfish harvested from mangrove forests generate income for many households, with trade in the hairy crab, the blue crab and the mangrove oyster being especially important.⁴

As eco-tourism destinations, mangrove forests also create economic opportunities for local tour guides.

Investment in mangrove restoration can therefore create and support livelihoods. As an adjunct benefit, since they support productive fisheries, mangrove forests can also help build food security.

Green infrastructure

Perhaps the most underestimated services provided by mangroves are those they deliver as 'green infrastructure' solutions.

Mangrove trees can serve as natural structural reinforcements to coastlines and surrounding areas. Their above-ground roots encourage deposition of sediment and can help bind and build soils – a feature which offers some protection against rising sea levels. They also buffer waves and help protect inland areas from storm surges, which can often cause severe flooding.

WITH THEIR TRUNKS ABSORBING SOME OF THE IMPACT OF WAVES, MANGROVES HAVE PROVEN TO BE AN EFFECTIVE DEFENCE AGAINST TSUNAMIS, REDUCING WAVE HEIGHTS BY AS MUCH AS 35%.⁵

Researchers have estimated that if all mangroves in the world were lost, 18 million more people would be flooded every year on average, and annual damages to property would increase by US\$82 billion.⁶

NGC's recently launched Climate Adaptation and Resilience Portal (CARP) has highlighted how sea level rise is projected to affect coastal communities along Trinidad's west coast in the next few decades. In that context, protecting, restoring and planting mangrove belts was identified as one useful strategy to help make settlements in that area more resilient to the impacts of climate change.

Carbon sequestration

An invaluable benefit of reforestation is the creation of natural carbon sinks. Trees remove carbon dioxide from the atmosphere and sequester the carbon in their root and shoot biomass. In so doing, they play an indispensable role in the mitigation of climate change.

The inundated soils of mangrove forests make them particularly adept at sequestering carbon. Due to low oxygen

levels, the carbon that gets incorporated into the soil through dead organic matter decomposes very slowly, resulting in longer term storage. Studies suggest that mangroves and coastal wetlands sequester carbon 10 times faster than mature tropical forests on an annual basis, and store three to five times more carbon per equivalent area than tropical forests.⁷ This is considered 'blue' carbon, since it is stored within an aquatic ecosystem.

NGC has elaborated commitments to reduce and offset its carbon footprint through various initiatives, in support of national emissions reduction targets. Given the carbon sequestration potential of mangroves, a focus on wetland restoration will help the company deliver on its commitments.

PROJECT DETAILS

On November 15th 2023, NGC signed a Memorandum of Agreement (MOA) with the IMA to collaborate on a mangrove rehabilitation project in the area north of the Couva River. This two-year project will include a public education and awareness campaign to teach community stakeholders about the importance of conserving wetlands, and capacity building training to enable community participation in the restoration activities. This will help create sustainable livelihood opportunities for residents. The IMA will also conduct assessments to determine the main causes of mangrove dieback in the area, to ensure rehabilitation efforts address those factors.

A mangrove nursery will subsequently be set up to generate seedlings for the project, and once the site is prepared, a planting exercise will be executed in partnership with the community. The site will be monitored thereafter – with the support of NGC's satellite technology and drones – to determine the success of the project and generate data and lessons for future undertakings.

As with NGC's reforestation programme, it is expected that this new project will return significant benefit not only to Couva and environs, but to the wider national community working to build a more sustainable home and future. Importantly, through its attendant communications and knowledge-sharing campaigns, it will turn a spotlight on the need to protect our valuable and vulnerable mangrove wetlands.

¹<https://www.unep.org/news-and-stories/story/inside-look-beauty-and-benefits-mangroves>

²<https://www.ima.gov.tt/wp-content/uploads/2018/04/Mangrove-Conservation-in-TT.pdf>

³<https://www.unep-wcmc.org/en/news/5-facts-about-mangroves-and-why-we-must-protect-them>

⁴<https://www.ima.gov.tt/2021/07/26/why-international-day-for-the-conservation-of-mangrove-forests/#:~:text=In%20Trinidad%20and%20Tobago%2C%20the,Maynard%20and%20Oxenford%2C%202014.>

⁵<https://www.unep.org/news-and-stories/story/inside-look-beauty-and-benefits-mangroves>

⁶Ibid

⁷<https://oceanservice.noaa.gov/ecosystems/coastal-blue-carbon/#:~:text=Current%20studies%20suggest%20that%20mangroves,equivalent%20area%20than%20tropical%20forests.>

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