

ENVIRONMENT

Caroni Swamp: A treasure under siege

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MANGROVES play very important roles worldwide. With that in focus this will look at the importance of our very own Caroni Swamp, in particular the role of the swamp mangrove ecosystem and its contribution as a fish nursery area which sustains our Gulf of Paria fisheries.

The Caroni Swamp is, no doubt, our most famous wetland complex. Spanning approximately 13,800 acres, the swamp is a mix of mangroves, mudflats and marshes fed and drained by the Caroni, Guayamare and Cunupia river systems.

The Caroni Swamp ecosystem is a dynamic or ever-changing one due to the ebb and flow of the tides of the Gulf of Paria, wet and dry seasons, moon phases, associated salinity, temperature, dissolved oxygen levels, high and low tides, riverine inputs and pollution effects (such as the recent oil spill in the Gulf of Paria December 2013).

The seaward mangal complex provides a complex maze of red mangrove (*Rhizophora mangle*) prop roots, which becomes partially submerged with the high tides, in the muddy waters of the ecosystem. This feature allows for small fish — the larvae and juveniles of shrimps, crabs and finfish — to hide from their predators and safely mature to become the future generation of fish stocks of the Gulf of Paria.

The high productivity of the mangrove ecosystem in the form of the high biomass of red mangrove leaf-fall provides the basis of the detritivorous food-chain feeding bacteria, protozoans and a variety of worms and crabs. These organisms allow for the



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decomposition of the leaves and nourish the offshore environment with the mixing of the tides. This abundance of food abounds in the waters of the Caroni mangrove ecosystem and its more saline Gulf of Paria waters, and feeds a variety of shellfish and finfish.

The contributions of physical protection of prop roots from tidal impacts also acts as a buffering system so calmer nutrient-rich waters are able to circulate, protect and feed nursery fish species.

On a global scale, the more extensive the mangrove ecosystems are along the coast, the higher the fisheries yield of the nearshore and offshore areas influenced by this unique vegetation.

Local research within the Caroni Swamp revealed that 75 percent of the ichthyoplankton (fish and shellfish stages found in the microscopic plankton) are of commercial importance.

Finfish species identified belonged to the taxonomic families of Carangidae (jacks and scads, example pompano, moonshine), Elopidae (ladyfishes), Engraulidae (anchovies), Belonidae (needlefishes), Gerreidae (mojarras or baitfish), Mugilidae (mulletts), Albulidae



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(bonefishes), Batrachoididae (eg. crapaudfishes), Clupeidae (sardines and herrings), Cynoglossidae (tonguefishes, flatfishes or soles), Scombridae (eg. carite) Sciaenidae (croakers and drums, example cro cro) and Serranidae (sea basses, example groupers).

Shellfish species identified were the larval shrimp stages of the *Penaeus* species and crabs, belonging to the *Porcellana* species and *Callinectes* species. Mangrove oysters (*Crassostrea rhizophorae*) and the exotic green mussel (*Perna viridis*) also use the red mangrove prop roots as a substrate to anchor themselves on to, feed, grow and nourish humans.

Despite its importance, the Caroni Swamp faces a variety of threats. A steady flow of polluted water enters the swamp, taking with it garbage, chemicals and organic waste from human settle-

ments scattered about the catchment area. While physical garbage is unsightly, it is the unseen toxins that slowly accumulate in the swamp that perhaps pose a greater threat. One 1999 research paper even indicated that mercury from South America was slowly accumulating in parts of the Caroni Swamp (the mercury apparently accumulates in the feathers of scarlet ibis as they feed downstream of gold mines in South America and, as the birds returned to Trinidad and moulted, their feathers decayed and released their deadly load into the swamp).

In 1973 the swamp faced a more direct threat from industry when Shell Trinidad Ltd, despite opposition from the Blue River Action Committee, began transporting liquefied petroleum gas (LPG) along the No 9 Canal and the Blue River from the refineries at Point Fortin and at Pointe-a-

Pierre to a bottling plant off the (then) Princess Margaret Highway. This ended only after the government acquired the assets of the company and constructed the new LPG facility at Sea Lots.

Knowledge grants us power, and knowing our resources should grant us the power to use our resources sustainably. I hope this article enlightens us to protect our natural resources and embrace the intrinsic beauty and functionality of mangrove ecosystems such as our Caroni Swamp — as tidal buffer, food resource and habitat for our national bird, the scarlet ibis — and the nearshore and offshore fisheries industries they nurture.

For more info on our natural environment, contact the Trinidad and Tobago Field Naturalists' Club at admin@tfnfnc.org or visit the website at www.tfnfnc.org.



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