Celebrating 35 Years of Research
INSTITUTE OF MARINE AFFAIRS

IMA NEWS

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Grande Riviere Beach

INSIDE THIS ISSUE

- IMA Board and Staff 2
- IMA Events & Activities 3
- Mother Nature at Work 4
- Blue Corner Hawksbill Turtle 8

MOTHER NATURE AT WORK

The village of Grande Riviere located on the north coast of Trinidad, between Toco and Matelot has been at the forefront of national and international concern since July 2012. Grande Riviere's importance lies in the fact that it is a prime nesting site for the endangered Leatherback Turtle *(Dermochelys coriacea)*. The local community benefitted from the advent of ecotourism which created numerous jobs ranging from tour guides, souvenir merchandisers and hotel staff as a result of nesting Leatherback Turtles and the Trinidad Piping-Guan *(Pipile pipile)*. State-funded environmental preservation programmes also account for a substantial proportion of village employment. As such, Grande Riviere bay presents an interrelated dynamic of socio-economic and ecological facets.

continued on page 4

BOARD MEMBER PROFILE

Newton George

Newton George is a scholar-practitioner in the disciplines of Human Resource Management, Industrial Relations, and Conflict Management. Mr. George attended Trinity College. He then went on to further his studies at the University of the West Indies, St Augustine (UWI) where he obtained a B.Sc. in Sociology. He also holds a Post Graduate Diploma in Human Resource Management (with distinction) from UWI – Arthur Lok Jack Graduate School of Business, and an LLB (Hons) from the University of London. Currently he lectures at the Masters level at UWI-Arthur Lok Jack Graduate School of Business in Contemporary Industrial Relations, and Legal and Ethical Framework of Human Resource Management. He is an independent Industrial Relations Consultant, and works also with the FIFA Development Division. Previously, he worked as a Labour Relations Officer at the Oilfields Workers' Trade Union and the Ministry of Labour.

He worked for a short period as an understudy to the Senior Assistant Registrar Human Resource and Industrial Relations at UWI, St. Augustine. He has over sixteen (16) years experience in human resource management/industrial relations and is a principal consultant for the Employers' Consultative Association.

NEW STAFF

Dr Donna-May Sakura-Lemessy, Deputy Director (Research)

Dr Donna-May Sakura-Lemessy is a Gates Millennium Scholar who holds a PhD in Civil and Environmental Engineering and a BA in Environmental Planning from the University of Miami, and a MSc in Environmental Sciences with a concentration in Geomatics from Florida International University. She is an honours graduate from the University of Miami and was amongst the first class of students in the U.S. to complete doctoral studies under funding from the prestigious Bill and Melinda Gates National Scholarship. Dr Lemessy's previous professional experience includes Senior Research Scientist at the Flint Water Policy Center and Lecturer in Physics and Engineering at Albany State University.

Dr Lemessy has conducted extensive fieldwork on Riparian Zones in South America under the Andean Amazon Rivers Analysis and Monitoring Project funded by Ford Carnegie Foundation and also has researched hydrological processes in watersheds including the Florida Everglades and the Little River Watershed in the U.S. She has published in the American Society of Civil Engineers, and the American Society of Agricultural and Biological Engineers. She has a unique combination of highly specialized training as an environmental planner, engineer, hydrologist and GIS professional which makes her qualified in the analysis of total maximum daily loads, water quality, hydrologic and hydraulic modelling and the use of GIS and remote sensing in water quality studies.

Ruth Miguel-Alleyne, Health and Safety Officer

Mrs. Ruth Miguel-Alleyne has worked in Health, Safety and Environment (HSE) for over four years. During this time she worked as Safety Specialist in a firm that specialized in HSE Consultancy and Training services. Mrs. Miguel-Alleyne was exposed to diverse experiences among various types of organizations, which provided her with the opportunity to hone her skills as an HSE professional.

Her expertise includes: developing and implementing safety management systems, conducting risk assessments, conducting incident investigations, and facilitating general safety and awareness training. She has also lectured in the Diploma in Safety and Health at the Safety, Health and Environmental Quality Institute. Mrs. Alleyne holds a BSc in Environmental and Natural Resources Management and a MSc in Occupational and Environmental Safety and Health.

NEW STAFF (cont'd)

Christian Lopez, Facilities Officer

Over the last 20 years, Mr. Christian Lopez has worked in the Manufacturing and Agricultural Sectors as an Engineer and Senior Manager. Over the years, Mr. Lopez has gained tremendous experience in areas such as Project Management, Human Resource Management, Employee Relations, Industrial Relations, Manufacturing Management, Plant Maintenance and Production Optimization.

Rameez Persad, Physical Oceanographer

Karl Doyle, Graphic Artist

IMA EVENTS & ACTIVITIES

World Wetlands Day

Annually, February 2nd is World Wetlands Day. This marks the date of adoption of the Convention on Wetlands on 2 February 1971, in the Iranian city of Ramsar on the shores of the Caspian Sea. To commemorate World Wetlands Day, IMA staff embarked on an educational tour through the Caroni swamp. Key ecosystem services which wetlands provide are: protection against coastal erosion; and provision of food and habitats for fish, crabs and other species. The Caroni Swamp is the second largest mangrove wetland in Trinidad and Tobago and an important tourist attraction that provides an important habitat for the Scarlet Ibis *(Eudocimus ruber)*, one of the national birds of Trinidad and Tobago.

In commemoration of this day, the IMA also mounted an exhibition in our Library, updated two brochures and participated in a radio interview.

Staff of the IMA at the Caroni Swamp

Caribbean Union College Visit IMA

On 22nd January 2013, students of the Caribbean Union College visited IMA's aquaculture facilities and were given a tour by Research Officer Rhea King-Julien. The purpose of the tour was to introduce them to various aquaculture farming systems.

Students learning about aquaculture

IMA EVENTS & ACTIVITIES - cont'd page 6

Mother Nature at Work

Continued from page 1

The village of Grande Riviere located between Toco and Matelot on the north coast of Trinidad, has been at the forefront of national and international concern, since July 2012. Grande Riviere's importance lies in the fact that it is a prime nesting site for the endangered Leatherback Turtle *(Dermochelys coriacea)*. Its status as a designated turtle nesting site has tremendously benefitted the local community not only by creating jobs in the eco-tourism industry but also by becoming a recipient of state funds for environmental presentation programs.

The bay is approximately 970 metres long and arcuate in shape with varying beach widths. The beach is wider at the eastern end with a well defined berm and low backshore topography. The beach gradient at the eastern section has a relatively gentle backshore with a moderate to steep beach face. The central to western regions of the bay, have a moderate sloping beach with the eastern section backed by steep cliffs.

The Institute of Marine Affairs (IMA) began monitoring the beach in 2000 to investigate the beach dynamics and risk posed to the leatherback egg clutches during the nesting season. Results indicated that at the start of the nesting season in March, the majority of leatherback nests were deposited on the eastern section of the beach. After May, there was a continued westward shift in nest distribution that coincided with sand accretion (deposition of sand) in a westerly direction as the season progressed until August. As such, the seasonal erosional and accretionary cycles on this beach supported the distribution of nests as the nesting season progressed. Beaches on the north coast of Trinidad usually build up sand from April to October and erode in the other months, particularly during the North American winter period from December to February with associated increased swell wave activity. Sand deposition from wave action creates berms during the accretionary months; however, while berms function as buffers to protect the backshore from the battering of waves, they sometimes impede the river flow to the sea forcing the river to find a new outlet.

Erosion channel - Tuesday 10th July, 2012

In April 2012, it was observed that the course of the Grande Riviere River had been shifting westward - deviating from its normal path through the berm in a northerly direction to the sea. Following the path of least resistance the mouth of the Grande Riviere River shifted west eroding the beach in the backshore area parallel to the coastline, crossing the berm and entering the bay approximately 100 metres west of its usual position. The diverted river flow created an erosion channel that impacted turtle nests and coastal infrastructure along its path. In July of 2012, a sand dam was constructed by the Drainage Division (Ministry of Works and Infrastructure, Government of the Republic of Trinidad and Tobago) to divert the river.

The sand dam forced the river to divert back to its original course. This unfortunately left a portion of the erosion channel abandoned which now acted as a sink for surface runoff from up lands trapping the water, which now posed a threat to public health, and the upcoming nesting season. The IMA subsequently set up additional beach profiling stations to monitor the recovery of the beach.

By November 2012, the sand dam had failed as the marine and hydrological regimes sought to regain balance in the affected areas; however, the erosion channel remained triggering demands by several concerned stakeholders that the erosion channel be in-filled. Some of the concerns raised included impeding public access to the beach, as well as threats to public health aid concerns and negative impacts on the turtles as the nesting season draws near.

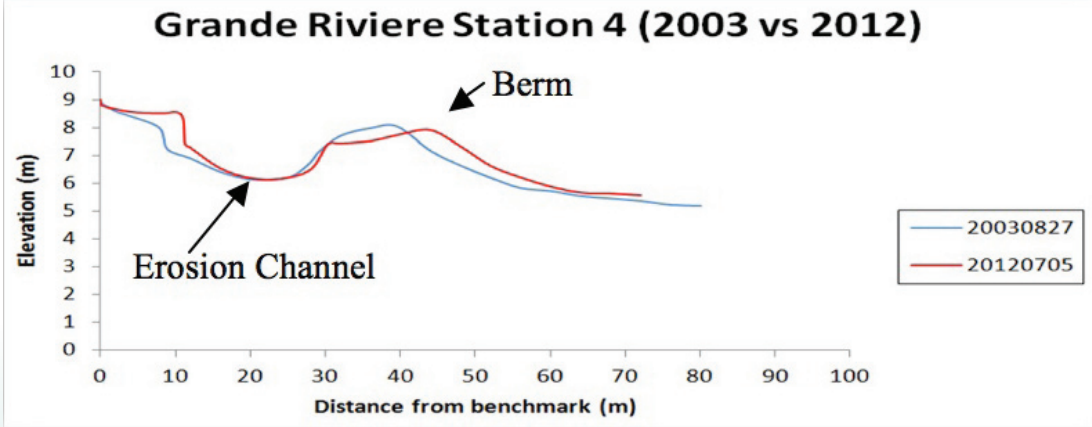

Figure 1: Showing the 2003 and 2012 erosion channels

However the IMA advises against such actions based on information gathered at it's beach profiling station indicating a high probability for regeneration of the beach, which will allow for equilibrium status to be achieved over time. The decision not to in-fill the erosion channel was based on issues related to beach stability and sustainability and included:

1. The potential for severe coastal erosion in the mined areas
2. The potential for the beach system to recover naturally over time
3. Alteration of the hydrological and geomorphology of the beach could affect the suitability of the affected area for turtle nesting
4. The compaction of the beach sand from the use of heavy machinery could have negative implications for successful turtle nesting.

Beach completely recovered Tuesday 15th January, 2013

As of Sunday 13th January 2013, the backshore erosion channel persisted and the calls for intervention continued. However, based on an extensive data set, the IMA advised that the winter swells during the months of December to February would superimpose higher energy waves on the beach system which would return the eroded beach sediment from offshore back onto the beach. While an exact time-frame for beach recovery was not given (since these marine conditions are based on meteorological conditions), it was noted that the beach will recover naturally over time.

On Monday 14th January, 2013 high swell waves were experienced on the north coast of Trinidad emanating from a large frontal system positioned off the North American continent heading east. This meteorological system produced the swell waves needed by Grande Riviere beach to facilitate its recovery. By the morning of Tuesday 15th January, 2013, the beach had recovered, and the erosion channel in-filled naturally, as sand was brought from offshore and deposited on the beach and backshore areas.

Junior Darsan Ph.D. Coastal Geomorphologist
Institute of Marine Affairs

IMA EVENTS & ACTIVITIES (cont'd)

IMA continues to combat the Lionfish

Jahson Alemu I – Research Officer Coral Reef Ecology shows participants "the Lion Tamer," one tool used to capture the Lionfish.

To educate the public and other stake holders of the impending Lionfish invasion, the IMA held its second Lionfish Awareness and Capture Workshop in Trinidad on 16 March 2013. It was conducted by Jahson Alemu 1 Research Officer - Coral Reef Ecology. The Workshop comprised two parts - practical and theory. Emphasis was placed on the importance of eliminating lionfish in the Caribbean through planning, organizing and executing lionfish elimination dives in a safe and effective manner. First aid treatments were also highlighted. Participants at the workshop included representatives from Eco Divers, the Ministry of the Environment and Water Resources, Fisheries Division and the Ministry of Food Production.

Lori Lee Lum Community Education Officer gives presentation on Careers in Marine Science

National Career Fair at Princess Town and Point Fortin

The National Training Agency on behalf of the Ministry of Tertiary Education and Skills Training hosted a series of Career Fairs for secondary school students in Trinidad and Tobago to provide Career Guidance to students in forms 3-5. The IMA was represented at the Point Fortin Secondary on 20 February 2013, and at Princess Town West Secondary School on 21 February 2013. Students were lectured on Careers in Marine Science, including Oceanography.

IMA Joins NIHERST Science fair

The IMA participated in the NIHERST Community Science Week Toco during 6-8 of March 2013 at the Toco Composite School, famous for producing our most recent Olympic gold medalist Keshorn Walcott. Science Week aims to promote science education in rural communities by providing children and adults with a fun science experience. Students gained an appreciation for our marine environment and the importance of conservation. About 195 students and teachers from primary and secondary schools in Toco visited the IMA's booth. Toco residents also participated.

Students learn about the invasive Lionfish

World Water Resources and Meteorological Day Celebration

The Ministry of Environment and Water Resources through the Forestry Division, Water and Sewerage Authority and Meteorological Services Division hosted a two-day exhibition at the Wildlife Section, Forestry Division Compound, St. Joseph on 21-22 March, 2013. The exhibition was held in commemoration of World Water, World Forestry and World Meteorological days, which were recognized globally on 21, 22 and 23 March respectively. The IMA used this opportunity to connect with a large number of students and adults from the general public and increase their awareness of our marine and coastal environment. The interactive games and information displayed also enabled persons to understand their role in keeping our marine environment healthy and clean.

Participants learn about essential ocean services

Transboundary Management of Marine Mammals Workshop in Suriname

Dr. Asha Singh, Marine Governance and Policy (first row third from left)

Dr. Asha Singh, Principal Research Officer, Marine Governance and Policy attended a Workshop on Transboundary Management of Marine Mammals under the Marine Mammal Conservation corridor for Northern South America (MaMa CoCo Sea) project held in Paramaribo, Suriname on 18-21 March 2013. The workshop was sponsored by the Regional Activity Center for Specially Protected Area and Wildlife (SPAW RAC) of the Cartagena Convention, The Green Heritage Fund, Suriname and the French Agency for Marine Protected Areas.

The objective of the Workshop was to exchange information and to discuss the on-going and projected actions regarding marine mammals in the region, especially those undertaken by the sponsors. One of the outcomes was the development of a Marine Mammals Action Plan for the MaMa CoCo Sea region. Dr. Singh contributed her expertise on marine mammals in the areas of management and governance and made a joint presentation with Dr. Judith Gobin, UWI St. Augustine, on the status of marine mammals in Trinidad and Tobago.

First CARIBSAT Regional Conference

Deanesh Ramsewak, Remote Sensing Officer, attended the 1st CARIBSAT Regional Conference, March 21-22 at the Hotel La Bateliere, Fort de France Martinique. Fifteen regional institutions are involved in the CARIBSAT project.

At the conference, 23 speakers reported on the results of various arms of the project as well as individual projects in their territories related to the CARIBSAT initiative. Mr. Ramsewak gave a presentation entitled "Use of high resolution satellite imagery and aerial photography to detect land use/cover changes in the Caroni Swamp".

Deanesh Ramsewak Remote Sensing Officer (first from left) with participants

IMA Celebrates 35 Years of Research

The 28th of March, 2013 marked the 35th Anniversary of operations of the IMA.

THE BLUE CORNER

"We must all work together in order to save the environment and the world that we live in from further change."

Dave Foreman

WHAT DO YOU KNOW ABOUT THE HAWKSBILL TURTLE?

Hawksbill turtle *(Eretmochelys imbricata)*

- Hawksbills get their name from their tapered heads, which end in a sharp point resembling a hawk's beak.
- Hawksbill turtles are found throughout the tropical waters of the Atlantic, Pacific, and Indian Oceans. They avoid deep waters, preferring coastlines where sponges are abundant and sandy nesting sites are within reach.
- Hawksbills are listed as Critically Endangered on the IUCN Red List. Despite the turtle's international protected status, they are often killed for their flesh and their stunning shells.

Reference
http://animals.nationalgeographic.com/