IMA NEWS

AUGUST 2018 **VOLUME 8 - ISSUE 2**

Over 1000 Mangroves planted!

MANGROVE FORESTS PROTECT US.
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INSTITUTE OF MARINE AFFAIRS

1978 - 2018
SCIENCE & INNOVATION
FOR MARINE CONSERVATION

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Over 1000 Mangroves planted!

Coastal mangroves are among the most threatened ecosystems on the earth. Current estimates indicate that up to 67% of mangroves have been lost to date, and nearly all unprotected mangroves could perish over the next 100 years. In Trinidad and Tobago, we are blessed with mangrove forests on most of our coastlines. Our largest systems are found at Caroni, Godineau, Icacos, Rousillac, Nariva, Moruga, and Bon Accord Lagoon, Kilgwyn and Petit Trou Lagoon in Tobago. They are home to an array of species including our national bird, the Scarlet Ibis; the newest designated Environmental Sensitive Species.

Mangrove ecosystems provide ecosystem services that are essential for life. From advancing food security, sustaining fisheries and forest products and offering protection from storms, tsunamis and sea level rise to preventing shoreline erosion, regulating coastal water quality and providing habitats for numerous species. Mangrove also play an important role in sequestering and storing significant amounts of coastal blue carbon from the atmosphere and ocean, crucial for mitigating climate change.

Healthy wetlands help us cope with extreme weather events. Mangroves can be an important defence against sea level rise. Mangroves may be able to colonize landward areas if space is available, and thus continue to provide coastal defence services against waves and storms; typical wave height is reduced to 13-66% per 100m of mangrove.

The Institute of Marine Affairs (IMA) joined the rest of the world in commemorating the International Day for the Conservation of Mangrove Ecosystem on July 26th 2018. The IMA and the Environmental Policy and Planning Division (EPPD) of the Ministry of Planning and Development collaborated to replant mangroves with over 100 volunteers at the Brickfield Fishing Facility. Over 1000 mangrove were planted, with the main purpose of this activity being to alleviate coastal erosion. At Brickfield coastal erosion has taken place on two artificial headlands that have been created from dredge spoils to protect the seaward entrance to that community's fishing facility.

Mangrove seedling prepped for replanting

This two part exercise involved first harvesting the seedlings on Saturday June 23rd from the Caroni Swamp, 1 154 seedlings were collected, and the second part of the exercise was the actual replanting on the following Sunday. Staff, NGOs, other Ministries and concerned citizens were deeply involved on both days. Every hectare of mangrove and coastal marsh is estimated to be worth up to US$15,16.00 a year in disaster-related services.

Our mangrove forests are a natural safeguard against disasters and help us cope with extreme weather events, and climate change. Well managed mangrove forests ensure communities are resilient and can bounce back from disasters. We must therefore take immediate action to conserve and promote sustainable use of our mangrove forests so they can continue to provide us with many ecosystem services, and protect us in the unforeseeable future.

Opposite page
Top:
Volunteers saving our coastlines by replanting mangroves at the Brickfield Mudflats

Bottom:
Minister of Planning and Development The Honourable Camille Robinson-Regis getting a hands dirty replanting mangroves – Brickfield Mudflats

IYOR 2018 and a visit by the Australian High Commissioner to Trinidad and Tobago, His Excellency John Pilbeam

Farahnaz Solomon PhD, Reesearch Officer,
Institute of Marine Affairs

His Excellency John Pilbeam, looks at geospatial data with Hamish Asmath, Research Officer

This year, 2018, has been designated International Year of the Reef (IYOR2018) by the International Coral Reef Initiative (ICRI), following mass coral bleaching events that have accelerated the devastation of coral reefs around the world. The 1st IYOR was declared in 1997; the 2nd in 2008.

In July, the Australian High Commissioner to Trinidad and Tobago, His Excellency John Pilbeam, toured the IMA. The main purpose of his visit was to encourage the Institute to apply for ICRI membership through its line Ministry, the Ministry of Planning and Development. The ICRI is an informal partnership between Nations and organizations which strives to preserve coral reefs and related ecosystems around the world in a framework of sustainable use. Its actions have been important in highlighting the importance of coral reefs and related ecosystems to environmental sustainability, food security and social and cultural well-being. ICRI is currently co-chaired by Australia, Indonesia and Monaco.

The Eastern Caribbean is currently under-represented in ICRI. Trinidad and Tobago's membership will fill an important gap, ensuring that coral reef issues in this area is adequately represented on a regional and international scale. Benefits to ICRI membership are numerous and include, access to training and capacity development, access to funding for coral reef research, technical support for coral reef monitoring, and induction into a mechanism for regional and international collaboration regarding issues affecting our reefs.

The IMA assured His Excellency that ICRI Membership is one of our goals for IYOR2018 and that we were committed to taking the necessary step to initiate this process. The IMA also took the opportunity to highlight some of the work that it has been doing for IYOR2018 as an active member of IYORTT – a group of governmental and non-governmental organizations that are coordinating activities locally. Activities executed to date include: several screenings of the Netflix Documentary – Chasing Coral, launch activities with stakeholders both in Trinidad and in Tobago, intertidal reef trips with underprivileged and special need youths, a research symposium on coral reefs at a regional conference and education and outreach at several youth vacation camps in July. The Institute thanks His Excellency for his visit and looks forward to further collaboration in the future.

Managerial appointments

Deputy Director - Research, Dr. Rahanna Juman

On September 1st 2018 Dr. Rahanna Juman assumed the position of Deputy Director (Research). Dr. Juman began her career with the Institute of Marine Affairs (IMA) as a Research Assistant in 1996 and advanced within the organisation up to the position of Senior Research Officer. She served as Principal Research Officer from 2013 to 2016 and has been acting as Deputy Director (Research) since 2015.

She holds a Ph.D. in Zoology from The University of the West Indies, St. Augustine and has been conducting applied research on coastal wetland ecosystems in Trinidad and Tobago for the past twenty (20) years. Her work has been published in international journals, and she has authored a book on the wetlands of Trinidad and Tobago.

Dr. Juman chaired a Cabinet appointed Steering Committee responsible for developing an Integrated Coastal Zone Management Policy Framework, Strategies and Action Plan for Trinidad and Tobago, and has been a member of the National Wetlands Committee, Buccoo Reef Management Committee and the National Environmental Assessment Task Force to investigate the December 2013 oil spill. She was a Hubert Humphrey fellow (2010-2011), a Watson International Scholars of the Environment Fellow (2008), an American Fellow (2006) and a UNESCO/ L'OREAL Fellow (2002) and has done internship at the United States Environmental Protection Agency (USEPA) and the National Oceanic Atmospheric Administration (NOAA) in the United States.

Human Resource and Industrial Relations Manager, Gyllis Noel

Mrs. Noel assumed the position of Human Resource (HR) and Industrial Relations (IR) Manager on 25th July 2018 and succeeds Mrs. Maria Wyke, who has been ad interim HR Manager since December 2016.

Mrs. Noel is an HR professional who has over 16 years' experience within the private and public sectors in areas of recruitment, training and development, labour relations, benefits administration, the development of organisational culture and providing support and advice to operational managers and executive staff. Mrs. Noel joins the IMA after having served as the HR Manager at the Education Facilities Company Limited (EFCL).

Prior to this appointment at EFCL, she was the HR Manger at Sierra Support Services Trinidad and National Infrastructure Development Company Limited (NIDCO).

Mrs. Noel holds a Bachelor of Arts Degree in Business Management from the University Of Lincoln, London and an International Masters of Business Administration with specialisation in Human Resource Management of Trinidad and Tobago (HRMATT) and the Society of Human Resource Management (SHRM).

She is passionate about assisting businesses to make the most of their human resources as well as attracting and developing the best talent. Mrs. Noel is excited to expand her knowledge and experience with the Institute of Marine Affairs and looks forward to adding value and working alongside the team.

We wish to record our appreciation to Mrs. Maria Wyke for her contributions during the last two years in maintaining the operations of the HR Department.

Information Technology Manager, Andre Hanief

Mr. Andre Hanief is an Information and Communication Technology professional with over fifteen years' experience and has assumed the position of Information Technology (IT) Manager, IMA with effect from 4th June 2018. Mr. Hanief succeeds Mr. Paul Nelson who has been ad interim IT Manager since August 2016.

Mr. Hanief has served in both the public and private sectors. His strengths lie in his ability to develop strong Information and Communication Technology (ICT) strategies in order to deliver organisational goals; complemented by ICT project management competencies. In his last portfolio, he conceptualized and implemented all Information Communication Technology projects under the Public Sector Investment Programme (PSIP) in addition to the normal operational activities of the department he supervised. He has added strategic value of the organisations he served through the development of innovative projects and by ensuring that those organisations were kept relevant in the ever changing ICT industry. We are especially delighted that Mr. Hanief brings with him, the much needed skills of Project Management and Disaster Recovery, which will serve this organisation well in its quest to enhance its capacity to deliver our projects on time and within budget and ensure the continuity of our work in times of crisis.

Mr. Hanief holds a Bachelor of Science degree in Computer Information Systems with a Minor in Computer Science from Andrew's University, Michigan and has completed several courses over the years in order to remain current and abreast of new ideas and initiatives in technology management. He is a Certified Disaster Recovery Engineer and has also completed courses such as the PMI'S PMP Credential Training Programme and Public Sector Investment Programme (PSIP) Project Management.

IMA warmly welcomes our new Managers!

IMA Public lecture Series continues

The third installment of the IMA's Public Lecture series in commemoration of its 40th Anniversary was held on the 24th July, 2018. The guest lecturer was Mr. Hayden Romano, Managing Director of the Environmental Management Authority (EMA) who delivered a presentation entitled "The EMA's Role, Function and Activities towards the Science-based Management of T&T's Oceans and Coasts. Mr. Romano was able to enlighten the public on the roles and functions of the EMA, namely its collaborations with similar organisations such as the IMA and Town and Country Planning Division. He stressed on the importance of a scientific approach to managing resources especially when it came to the National Environmental Policy whose success depends on collaboration and trust between researchers, regulators and resource-users. Furthermore, The Environmental Management Act (EM Act) presents the functions of the EMA as a regulatory, coordinating, educating and facilitating body.

As a regulator, there are four major rules that the EMA subscribes to; the Environmentally Sensitive Species Rules, Environmentally Sensitive Areas Rules, Noise Pollution Control Rules and the Certificate of Environmental Clearance Rules. A fifth, the Waste Rules is under discussion by the line Ministry. Each of the four, are based on scientific research and stakeholder consultation. One example given by Mr. Romano was the development of Ambient Water Quality Standards, which encompasses technocrats from the government, research institutions and NGOs.

As an educating body, the EMA conducted a National Environmental Survey in 2016, the responses of which stated that 80% of persons saw marine and coastal pollution as a significant to severe problem. The EMA has also conducted a Matura Education and Outreach Programme which generated a 3D model having combined scientific and indigenous knowledge. Mr. Romano also stressed the importance of building capacity to foster collaboration which would seek to standardize environmental reporting, improve linkages nationally and through public consultations as has occurred with the revised National Environmental Policy (NEP). Ongoing work also includes collaboration with the Ministry of Trade and Industry in developing guidelines for the yachting sector.

Mr. Hayden Romano, Managing Director of the EMA

As a facilitator, the EMA currently has a National Restoration, Carbon Sequestration, Wildlife and Livelihoods Project. This project focuses on the rehabilitation of degraded lands of the Northern Nariva. Other endeavors include Wildlife Research and Conservation and Understanding Ecological Risk in the Southwest Peninsula.

As the EMA continues to serve the people of Trinidad and Tobago, Mr. Romano stressed that they will meet the requirements of the EM Act through holistic reporting in its State of the Environment Report. He implored attendees to become "Stewards of Trinidad and Tobago's natural resources and environment", meeting current and future human, ecological and economic needs.

Cross section of attendees at the Public Lecture Series

Protect yourself at the beach this rainy season!

Sheldon Ramoutar, Research Officer,
Institute of Marine Affairs

Saline Bay

The rainy season is upon us and if you are thinking of heading to the beach here is some information that will help you decide the best time and safest place to bathe along the stretch of our beaches regarding biological pollutants. Numerous persons visit beaches around Trinidad and Tobago in any given week with highest numbers during the school vacation (July –August). The rainy season occurs between mid-May to mid-December with Petit Carême occurring between mid-September to mid-October. In the rainy season, the mornings are usually sunny followed by afternoon showers and fair nights. This increase in rainfall during this period leads to an increase in land runoffs into watercourses, rivers and beaches. As water flows over surfaces, it picks up a variety of pollutants including oil, bacteria, nutrients, grease, pesticides and heavy metals. This article will focus only on bacterial pollutants with respect to human health. The bacteria relevant to human health is faecal bacteria and if found in runoffs may be from animals such as dogs, cats, farms and/or wild animals and sewage from untreated human waste. Eventually, the polluted water reaches surface water, and, if near a swimming beach, can result in elevated concentrations within and after a rainfall event depending on the topography of the beach.

What bacteria can be present?

Most bacteria present in our environment and within us are actually not disease causing but even beneficial and essential. Very few bacteria are disease causing and the World Health Organisation (WHO) together with the United States Environment Protection Agency (USEPA) developed guidelines concerning recreational use of the water environment to monitor and assess their effective management. Coliform bacteria represents a large group of many types of bacteria that occur throughout the environment and also in waste from humans and animals.

Most types of coliform bacteria are harmless to humans, but some can cause mild illnesses and a few can lead to waterborne diseases including ear and eye ailments and particularly gastroenteritis. Coliform bacteria are often referred to as "indicator organisms" because they indicate the potential presence of disease-causing bacteria in water. **The presence of coliform bacteria in water does not, however, necessarily lead to an illness but rather their presence indicates a level of contamination.** Persons who are immunocompromised- infants or elderly- may be most at risk of getting an infection. Bacteriological water quality studies conducted by the Institute of Marine Affairs (IMA) since 1981 revealed high levels of bacteria after rainfall events, some above the WHO and USEPA established acceptable limits. It is very expensive and hence impractical to test for all pathogens therefore specific indicator organisms are used. Three specific indicators established by WHO to test water quality are faecal coliform, escherichia coli and enterococci. These 3 indicators are common and natural inhabitants of the intestinal tract of warm-blooded animals, including humans therefore their presence is believed to indicate sewage contamination. In marine water, the guideline value is set a geometric mean of 35 CFU (colony forming units) for enterococci, 126 CFU for E. coli and 200 CFU for faecal coliforms in 100 mL of water.

How do we identify these bacteria?

The faecal bacterial concentrations cannot be determined by appearance of the water but by various laboratory tests using culture-based methods such as membrane filtration and most probable number techniques which tests the presence of these microorganism in a given volume of water. These methods can take between 24 to 48 hours for results to be obtained, new techniques are being explored to reduce the waiting time using molecular methods including quantitative polymerase chain reaction (qPCR) and define substrate technology (Colilert). Based on the results obtained from previous studies we recommend the following guidelines and precautions for bathing at a beach during the rainy season.

Guidelines and Precautions

- Avoid bathing near to or in rivers near shorelines permanently as they carry pollutants from inland throughout the year with or without rainfall.

- Choose an area of the beach which experiences little or no runoffs during heavy showers. The whole beach will not be affected or be polluted by heavy runoffs but areas close to drains, small watercourses and visible water runoffs from roads etc.

- WHO estimates the T90 (90 % die-off rate) for total coliform is approximately 2.2 hours to 48 hours for marine waters taking in account dispersion and dilution. Similar times were reported for e.coli and enterococci. It is suggested to not enter beaches with heavy runoffs after rainfall events. The time will increase however dependent on the length, frequency and intensity of the rainfall event.

- Other precautions for bathers are to avoid swimming with open cuts and wounds as this creates a direct entrance for bacteria into the body, wash hands before handling food and shower after swimming.

- For further information, you can visit the Ministry of Planning and Development's website for the State of Marine Environment Report of Trinidad and Tobago 2016 (Publication section) produced by the IMA, which highlights beaches within the bathing beach acceptable limits set by the WHO.

IMA Events & Activities

IMA at Sandy Shorelines Project

Coastlines are environmentally sensitive interfaces between the ocean and land and respond to changes brought about by economic development and changing land-use patterns. Often coastlines are also biologically diverse inter-tidal zones, and can also be highly urbanized. Researchers project that a one-meter sea-level rise will inundate 29% of the Caribbean Community's (CARICOM) major hotel resorts and displace an estimated 110, 000 people in CARICOM nations.

During the period 6th – 21st August, Dr. Ahmad Khan, Mr. Aaron Mohammed and Mr. Christopher Alexis attended an initiative of the Korean Government facilitated by the Association of Caribbean States (ACS), in Panama City, Panama called the Sandy Shorelines Project. This project aims to standardize a coastal erosion monitoring network throughout Caribbean member states, Central and South America. The territories in attendance included; Panama, Grenada, Antigua & Barbuda, Costa Rica, Dominican Republic, Jamaica, Guatemala, Haiti, Barbados and Trinidad & Tobago. Topics covered include Coastal Processes and Methodological Criteria for Beach Recovery and Sedimentology.

(l-r) Mr. Christopher Alexis (IMA) Mrs. Heidy Linares - Project Manager, Association of Caribbean States, Dr. Ahmad Khan Director of (IMA), Mr. Aaron Mohammed (IMA), Mr. Alexander Girvan- Coordinator of the Caribbean Sea Commission

CARICOM Regional Workshop

Kahlil Hassanali attended the 2nd CARICOM Regional Workshop on the Conservation and Sustainable use of marine biological diversity of areas beyond national jurisdiction at the Radisson Fort George Hotel and Marina, Belize City, Belize.

The workshop was held from 30th July – 1st August 2018 and brought together CARICOM's New York based negotiators, capital based focal points and regional and international experts. The group discussed current and emerging issues relating to the development of the new legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. The workshop also aimed to provide a platform for the region to further strengthen its negotiating team, identify its priorities and develop its strategy moving into the first session of the Intergovernmental Conference to be held from 4th to 17th September 2018. At the conference a presentation was also given on Marine Protected Area (MPA) management in the Caribbean with a particular focus on MPA networking.

STEM Programme Camp visits

Learning about the widespread impacts of plastic pollution on our marine environment, various tools used in marine sampling and technological enhancement was the main part of the itinerary covered as students from the STEM Programme visited the IMA on August 6th 2018s. The STEM programme aims to build awareness, interest and competences in science technology, education, math (STEM) and expose students to a range of careers. These students receive a bursary from the Shell Company and are Top SEA performers from Moruga and environs, the north coast marine areas such as Maracas and Blanchisseuse.

Students of Sangre Grande SDA filling out marine log books during Sea & Me session.

'Sea & Me' extends to the East

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IMA partners to "BEAT PLASTIC POLLUTION"

The theme for World Environment Day 2018 is "Beat Plastic Pollution" and is a call to action for all of us to come together to combat one of the great environmental challenges of our time. The Caribbean Network for Integrated Rural Development (CNIRD) in collaboration with Global Environment Facility (GEF), Small Grants Programme (SGP), and United Nations Development Programme (UNDP) partnered with the IMA to extend UN's World Environment & Oceans Day theme to Atlantic LNG's: Point Fortin's Finest Leadership Development Programme on July 10th 2018. These top students from the Borough of Point Fortin and environs were exposed to Marine Environment Education Programme in Trinidad & Tobago (MEEPTT) marine debris and conservation presentation and activities to ensure young leaders in Pt. Fortin remain environmentally conscious. One of the main types of marine debris that you hear about today is plastic marine debris. As common as they are on our beaches and in our homes, how much do you really know about plastics?

IMA outreach team & MEEPTT at Point Fortin's Finest Leadership Development Programme

Life along the Seashore
OF TRINIDAD AND TOBAGO

Lori M. Lee Lum E. Julian Duncan

In commemorating the 40th anniversary of the Institute of Marine Affairs (IMA) presents the reference field guide – 'Life along the Seashore of Trinidad and Tobago'.

It focuses on the identification of the rich biodiversity found along the seashore of our beautiful twin-island Republic. Packed with detailed descriptions supported by vivid photographs, the book enables users to develop an appreciation for our seashore life.

Get your copy now!
Call 6344291 ext 2406

$120.00

THE BLUE CORNER

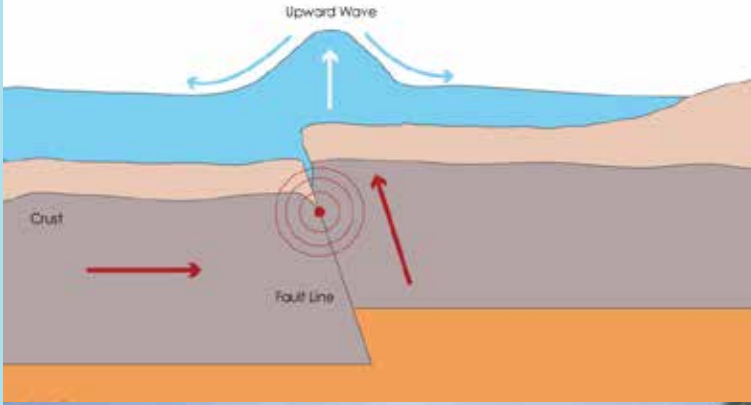
Tsunamis

Have you ever wondered, what it is about earthquakes that cause Tsunamis?

A tsunami or tidal wave, also known as a seismic sea wave, is a series of waves in a water body caused by the displacement of a large volume of water, generally in an ocean. These tidal waves are typically caused by large, undersea earthquakes at tectonic plate boundaries. When the ocean floor at a plate boundary rises or falls suddenly, it displaces the water above it and launches the rolling waves that will become a tsunami. On August 21st 2018 a 6.9 earthquake rocked Trinidad and Tobago, a following Tsunami warning was issued but we were spared.

Trinidad and Tobago is located in a seismically active region; earthquake zones are North of the Paria Peninsula, Gulf of Paria, East of Trinidad, North of Trinidad, South West of Tobago, West of Tobago and on land Trinidad.

Reference: *science.howstuffworks.com*



Right, bottom: Arrival of the second wave in Phuket, Thailand, during the 2004 Indian Ocean tsunami.
Photo credit: Zalzadore (under Creative Commons Licence)

A publication of:
INSTITUTE OF MARINE AFFAIRS
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www.ima.gov.tt
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