IMA NEWS

DECEMBER 2019 **VOLUME 9 - ISSUE 2**

Beyond the Blue

pg2

IMA Events & Activities pg
Blue Corner pg

INSTITUTE OF MARINE AFFAIRS

Beyond the Blue

Citizens of Trinidad who attended the Beyond the Blue Environmental Exhibition, found themselves a special treat as this Exhibition brought real life marine environments to all who participated. This was done through immersive technology and the reconstruction of various ecological habitats.

This exhibition which was held on September 17th - 19th 2019 at the NALIS Port of Spain Library was split into three distinct parts- the ground floor draped with marine species, oceans sounds, coral reefs and a state of the art virtual reality station. A recreated mangrove ecosystem with lush greenery, swamp animals complemented with sound of birds, and the last area a career in marine science lounge. This area allowed for students and visitors to interact with marine scientist and see some of the tools used in the various fields of work. At the end persons attending were able to test their knowledge through an environmental jeopardy game. Each of the aforementioned areas consist of photos, three dimensional models as well as multimedia and interactive presentations that explain the complex natural processes of marine ecosystems.

Caption Top Left

Caption Top Right

Caption Bottom:

Welcome to the IMA

Anaa London

Anasa London joined the IMA on 1 November 2019 as the organization Procurement Supervisor. Ms. London is by profession, a Procurement Specialist with over 12 years' experience in the Logistics and Supply Chain industry, operating in various fields including construction, port operations, security and event management.

She has pursued and graduated with a Master's Degree in Logistics and Supply Chain from the Australian Institute of Business, a Bachelors' of Science Degree in Project Management from the Cipriani College of Labour and Co-operatives Studies. Ms. London is also a certified Project Manager of the Project Management Institute (USA).

She volunteers at the Project Management Institute, Southern Caribbean Chapter (PMI SCC) where she assists in making citizens of Trinidad and Tobago aware of the benefits of Project Management. By virtue of her education and training, she has developed strong time management and organizational skills, which today, plays an integral role in her contribution to her Alma Mater CCLCS Alumni Association.

She hopes to engage all employees at the IMA to ensure that they fully understand all the practices of Good Governance, in order to implement and practice policies and procedures needed. She future seeks to ensure that all understand what the objects of the Procurement Act promotes which are;

a) Principles of accountability, integrity, transparency, and value for money;
b) Efficiency, fairness, equity and public confidence; and
c) Local industry development, sustainable procurement and sustainable development, in public procurement and the disposal of public property.

The implementation of effective procurement can benefit the IMA by reducing cost, improved delivery timeframe, ensuring quality, reduction on stock proliferation and increases purchasing power.

(L-R)UWI Head of Life Sciences Department Dr. Judith Gobin, UWI Professor of Tropical Ecology John B.R. Agard, UWI Principal Brian Copeland, IMA Chairman Hayden Alexander, IMA Director (Ag.) Rahanna Juman, IMA Legal Counsel Cyril Best

IMA to work closely with the University of the West Indies (UWI), St. Augustine

The Institute of Marine Affairs (IMA) has achieved another of its targets of their 2019-2024 Strategic Plan. October 22nd 2019 was a milestone for both the Institute of Marine Affairs (IMA) and the University of the West Indies (UWI) St. Augustine. Both parties signed a Memorandum of Understanding (MOU), which will strengthen the scientific and technical co-operation in areas such as research, training and public education.

The MOU will increase the exchange of knowledge, information, experiences and achievements in the scientific and technical fields; develop the scientific and technical capacity of the Parties through joint research and training of students/staff and other personnel; and use the information generated to support policy and decision-making in Trinidad and Tobago and the wider Caribbean. One of the first collaborations will aim at Carbon measurements in mangrove forests. This is of importance as mangrove forest are among the most carbon – rich habitats on the planet, even though they occupy just a fraction of the world's surface. They remove carbon from the atmosphere and can hold in solid or liquid form. This projects also suggest that if one wants to slow carbon emissions perhaps measuring of the Mangrove capacity to retain carbon is a good place to start!

Unveiling the Matura National Park

Caption

Through the Improving Forest and Protected Area Management in Trinidad and Tobago project, the unveiling of new signage at protected areas was conducted on November the 13TH 2019. The Matura National Park an Environmentally Sensitve Area (ESA) was the first of six pilot protected areas of focus in the project to be bestowed with these simple yet significant features which are intended to aid in building awareness and valuing of protected areas. The signage was unveiled at the main entryway to the ESA, at the corner of Salybia-Matura Trace and Toco Main Road in the village of Salybia. Senator the Hon. Clarence Rambharat, Minister of Agriculture, Land and Fisheries and Mr. Reuben Robertson, representative of the Food and Agriculture Organization for Trinidad and Tobago and Suriname took part in the unveiling ceremony after addressing a small gathering of about 60 persons including members of the surrounding communities. Present at the unveiling was representative from the Institute of Marine Affairs as part of the protected area is approximately 39 ha. of beach habitat. The coastal environment continues to the play an important role in sustaining the livelihoods of various communities. Pristine in land forest areas are often linked to favourable marine environments.

Song of the Seagrass

Attish Kanhai, Research Officer,
Institute of Marine Affairs

Worldwide, seagrass beds are disappearing. Recent studies have estimated that globally, seagrass coverage is being lost at a rate of 1.5 percent per year. Photo by Christian Gloor.

In the early twentieth century, coal miners would carry canaries in cages with them as they descended into the cavernous depths of mines. As long as the canaries kept singing, the miners would continue working. If the canaries stopped singing, it was usually because they had died, alerting the miners about the presence of carbon monoxide and other toxic gases.

In a way, our oceans also come equipped with their own canaries. And while corals may be the best known example, seagrasses are an important early warning system of underwater environmental degradation that we have ignored for far too long.

Although seagrasses are often mistaken for seaweed or algae, they have leaves, roots, and veins, and produce flowers and seeds. They photosynthesize just like their monocotyledon cousins: grasses, lilies, and palms. Seagrasses are found off the coast of every continent on Earth except Antarctica. There are seventy-two species of seagrasses which — aside from a few exceptions — flourish in shallow waters where sunlight is plentiful, at depths of 1 to 3 meters. Yet worldwide, seagrass beds are disappearing. Recent studies have estimated that globally, seagrass coverage is being lost at a rate of 1.5 percent per year. Alarmingly, that translates to approximately two football fields of seagrass lost each hour.

Another study estimates that 29 percent of seagrass meadows have died off in the past century. It is a trend that Dr. Rahanna Juman, wetlands ecologist and deputy director of the Institute of Marine Affairs in Trinidad and Tobago, has observed first hand.

“Over the last few years, seagrass beds have been decimated in Trinidad, reflecting the same pattern that has been observed worldwide. A lot of unplanned coastal development has led to the disappearance of seagrass beds from where they once dominated, and supported a high level of biodiversity,” explains Juman, who has been studying seagrasses for more than two decades.

In addition to the direct impacts of coastal development and dredging activities, pollution and declining water quality have also affected seagrass habitats. Under the criteria of the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species, 14 percent of all seagrass species are currently at elevated risk of extinction, with 3 species qualifying as endangered.

Yet, the survival of seagrasses has never been more crucial. Seagrasses provide a number of important environmental services. "They are the basis of the marine food chain, and they are a major food source for fish populations, as well as invertebrate habitats," says Juman.

More efficient than costly seawalls, seagrasses are also a nature-based solution to shoreline erosion. Their dense root network stabilizes sediments and helps dissipate wave energy, providing protection that, as sea levels rise, will be crucial for coastal cities.

Perhaps most importantly, seagrasses may be our greatest secret weapon in the fight against climate change. They help tackle two of the biggest anthropogenic issues facing the ocean today: global warming, the increased temperature of the earth due to the increased presence of carbon dioxide and other air pollutants in the Earth's atmosphere, and ocean acidification, the decreasing pH of the world's oceans due to increased absorption of carbon dioxide leading to the formation of carbonic acid. Indeed, when it comes to carbon dioxide sequestration, seagrasses are more effective than terrestrial forests as they trap carbon dioxide below the surface of the water. Dead seagrasses are likely to remain buried for hundreds of years keeping their trapped carbon, also known as "blue carbon," with them.

It has been estimated that one hectare of seagrasses sequesters as much carbon as 10 to 40 hectares of dryland forests.

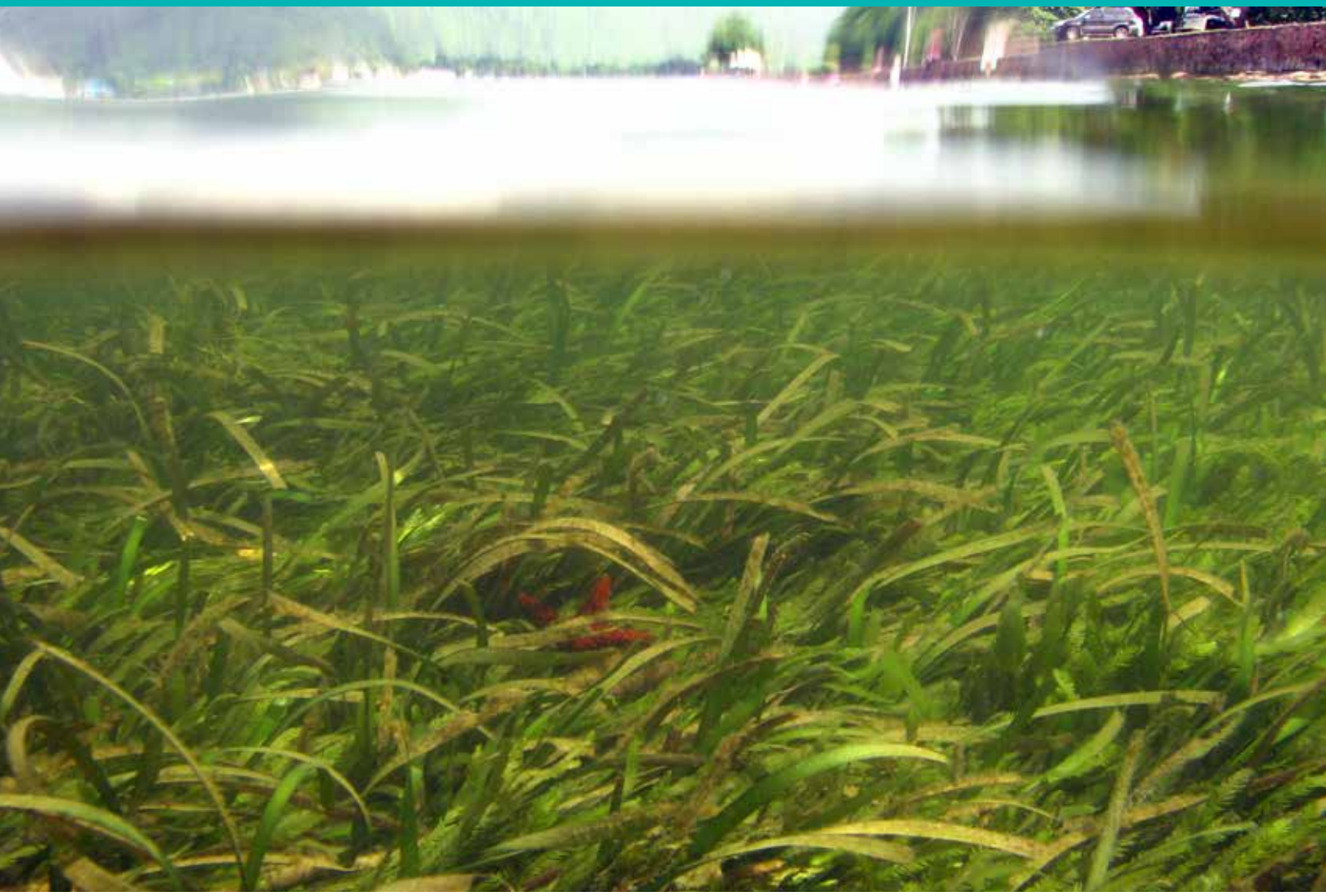
"Seagrasses mitigate against climate effects and are considered a blue carbon ecosystem," says Dr. Juman. A blue carbon ecosystem is a marine ecosystem, normally seagrass meadows or mangrove forests that sequesters carbon.

Experiments conducted in Tampa Bay, Florida, showed that seagrass meadows also increase ocean pH by as much as 0.5 pH units, providing marine animals with a sort of refuge from the effects of ocean acidification. Although this is a marginal increase — a drop in the ocean, if you will — when it comes to mitigating the effects of ocean acidification, it is still quite important. At least for a few decades longer, seagrasses will help ward off the effects of ocean acidification. Of course, if our dependence on fossil fuels continues unabated, ocean acidification will continue to worsen and affect the world for centuries.

In recent years, there have been several efforts aimed at reviving seagrasses. Globally, several organizations and campaigns have helped raise awareness about the seagrass crisis, and some replanting projects have also showed signs of early success. The Virginia Institute of Marine Science in the eastern United States seeded 456 acres of the Chesapeake Bay with 7.65 million seagrass seeds throughout 2014. By 2015, the seagrass Zostera marina increased from those seeded plots to cover 6,195 acres. Seagrass restoration in Tampa Bay, Florida, has also demonstrated positive impacts, including improvements in water quality and fish stocks.

But despite these efforts, the chorus of our ocean canaries continues to grow quieter over the years. Their silence is ominous, and is a warning we must now heed.

Dr. Juman emphasizes that for widespread seagrass restoration to work, it is critical that we address the root causes behind their decline. The solution, in her view, is an integrated ridge-to-reef approach, (Ridge to Reef or R2R refers to a strategy where river basins and coastal areas are managed in order for people and nature to thrive): We will need to arrest problems such as increased sedimentation from deforestation and pollution from agricultural activities at their source, if we want to avoid further loss – and indeed encourage new growth – of these valuable ecosystems. Indeed, there has been some evidence of natural recovery after excessive nutrients from fertilizers and other human pressures have been removed or reduced. For example, seagrass transplant trials were successful in New Zealand at Whangarei Harbour which had initially lost almost all of its 1400 hectares of seagrasses due to anthropogenic impacts in the 1960s. Once these activities had ceased in the 1980s recovery became possible. Transplant trials in 2008 and 2012 were ultimately successful in recovering 40 percent of the original seagrass beds that were lost.



A similar situation was observed in the Adelaide metropolitan coast, Australia where, due to heavy nutrient inputs seagrasses were overgrown and subsequently displaced by the growth of epiphytic algae. Substantial effort was placed on reducing the nutrient input into Australia's coastal waters with special focus being placed on nitrogen and particulate matter. This improved management strategy resulted in some natural recovery of seagrasses in the area.

Dr. Juman maintains that community engagement is also key to the success of seagrass mitigation and restoration efforts.

"Seagrass replanting strategies can work if coastal communities recognize the value of seagrasses," she says. However, seagrasses suffer from a bit of an image problem – most beachgoers view them as sort of a nuisance. Everyone can relate to coral reefs, for instance, as they are quite charismatic. Seagrass beds, on the other hand, are not as colorful and attractive and therefore do not receive the same attention or public buy-in to lobby for their protection."

It is imperative that we change our perception of seagrasses so that we can better protect them. As Dr. Juman puts it, "We must transform seagrasses from being the ugly duckling of the sea, to a beautiful swan." Or, perhaps, more aptly, a beautiful canary.

CLME+ Project
Caribbean & North Brazil Shelf Large Marine Ecosystems

The CLME+ Region

From CLME to CLME +

CLME acronym for Caribbean Large Marine Ecosystem. This project assisted participating countries to improve governance arrangements for shared Living Marine Resources, through the implementation of an Ecosystem-Based Approach (Ecosystem-based management is an environmental management approach that recognizes the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation). Trinidad and Tobago participated from 2009 to 2014. The CLME project focused on Trans –boundary issues in the region. Trans -boundary issues is an environmental problem that may originate from one country but often impacting another. This project identified the three most critical trans-boundary issues in the region:

- Overfishing
- Pollution
- Habitat degradation

Fast forward into 2015, this saw the launch of a 5 year project called the CLME+ (2015-2020) implemented by the United Nations Development Programme (UNDP) and co-financed by the Global Environment Facility (GEF). CLME+ like its predecessor also implemented an ecosystem based approach but for management of fisheries in order to ensure sustainable and climate – resilient provision of goods and services from shared living marine resources. Trinidad and Tobago is involved in the following areas.

- Ecosystem Approach to Fisheries (EAF) for the Shrimp and Ground fish Fishery
- EAF for the Eastern Caribbean Flyingfish
- Strengthening Ecosystem Based Management Frameworks and Ocean Governance in the North Brazil Shelf Large Marine Ecosystem.

Several projects were catalysed from the CLME+ in particular one that addressed the impacts of Land- based Sources of Pollutants on Critical Coastal Habitats such as Mangrove Swamp.

IMA Events, Activitie & Outreach

Student with Dyslexia Wins Institute of Marine Affairs Prize 2019

The Institute of Marine Affairs (IMA) has successfully hosted final-year Marine Science students from the University of Trinidad and Tobago (UTT) in IMA's May - August 2019 Internship Programme. For fifteen weeks, while awaiting graduation, the interns benefitted from the opportunity to gain hands-on experience under the supervision of experts in the field, in conducting marine environmental research, as well as to develop proper work ethics in an effort to gain an appreciation for all aspects of the marine environment.

Wednesday 21st August 2019 was another exciting day for the Interns here at the Institute as they geared up with the staff and ventured out to Hart's Cut, Chaguaramas. The crew was in good spirits as they set out to complete their mission of conducting sediment and water quality testing at four different stations.

Leading the operations was Director of the IMA, Dr. Ahmad Khan, who guided the Researchers to ensure everything went smooth sailing. Under the supervision of the Director and two Lab Technicians, Shane Ramsammy and Amir Dubrie, the Interns received hands-on experience with the different sampling and analytical procedures and equipment used. They were also exposed to the importance of such research as it provides a window into the health of our marine environment that can favourably impact both aquatic and human life.

As the crew anchored at each station, water quality was analyzed through sample collection and tested for levels of ammonium, nitrates, and phosphates. This is important as excess levels of ammonium are toxic and can prove to be fatal for fish, as well as, excess levels of nitrates and phosphates stimulate growth of phytoplankton that deplete oxygen levels and make survival of aquatic life difficult.

IMA's Librarian, Lorraine Barrow, awarding winner Joshua Gooding with the Institute of Marine Affairs Prize.

Physical parameters such as dissolved oxygen concentration, pH temperature, salinity and turbidity were also measured to assess the water quality. All of which affect the survival of aquatic life.

Sediment samples were collected to be taken to the IMA lab and tested for heavy metals which can sbioaccumulate in aquatic organisms and pose a risk to human health during consumption.

Once the mission was completed, the crew headed back to the IMA where further testing is to be completed.

Republic Bank Supports the Institute of Marine Affairs as they prepare for the United Nation's Decade of Ocean Science for Sustainable Development

The Institute of Marine Affairs (IMA) is one of 51 not-for-profit organisations to benefit from the Republic Bank Limited (RBL) 'Power to Make a Difference' programme for the year 2020. The grant will support the Beyond the Blue initiative, which is a public engagement initiative in preparation for the United Nation's Decade of Ocean Science for Sustainable Development. The bank will support the Beyond the Blue initiative to the tune of TTD150, 000.

Caption

This grant will assist the IMA in raising awareness and fostering an understanding of the benefits of the various marine environments that sustain our livelihoods and of the role ocean science plays in maintaining healthy oceans and seas.

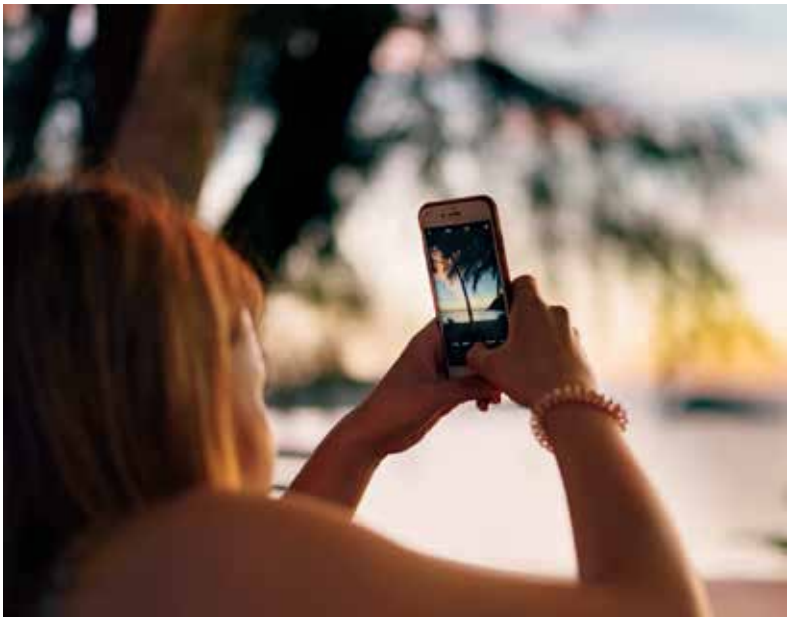
The 'Power to Make a Difference' programme provides financial support to communities in pursuit of sustainable development. The programme is currently in its fourth phase which is the 'Power to Succeed'. It focuses on business development programmes, environmental preservation and the pursuit of entrepreneurial excellence.

Initiated in 2003, the programme continues to work together with various communities through enhancing the lives of disabled persons and providing opportunities to others through sports, education, literacy, culture and the arts.

Lionfish App on the horizon

Laptops and desktop they all have their place. However resent trends suggest that persons are migrating from computers to handheld devices like smartphones and tablets. People are finding information, making purchases and interacting through App's. Since the arrival of the Lionfish in July 2012 to our waters the IMA has been engaged in several awareness campaigns that aimed at reducing the lionfish numbers and consequently curb the impact these invasive has on our marine environment. These campaigns involved diving culling events, school and fisher folk's educational outreach, animations and tasting events. In 2020 the IMA will utilize the mobile application market to further increase awareness of the lionfish and dissemination of data. Once launched this app will have the ability deliver the following:

- reports of sightings of lionfish by divers, fisher folk and others.
- capture reports of oil and chemical spills.
- capture reports of fish kills, red tide/ algal blooms.
- Follow the emergence of Sargassum.
- capture reports on storm and, coastal erosion and coastal flooding.
- To capture reports of any other marine environment incidents such as beached whales/dolphins/turtles etc.



St. Augustine Girls' High School (SAGHS) tops IMA Essay Writing Competition

Sariah Esther Ramcharitar, an Upper Six student of St. Augustine Girls' High School (SAGHS), cops first place in the Beyond the Blue Essay Writing Competition hosted by the Institute of Marine Affairs (IMA).

Ms. Ramcharitar won with a total of 467 points. Ariv Bhagaloo of Vishnu Boys' Hindu College placed second with a total of 431 points and Naomi Wickham of St. James Secondary School came in third with 404 points. The first place winner received an Apple iPad, courtesy of Coastal Dynamics Limited. The second and third place winners received TTD 1000.00 in units' courtesy the Unit Trust Corporation (UTC) and two tickets to Tobago from Caribbean Airlines Limited (CAL), respectively.

The winners were announced on December 11th 2019 at the Prize-Giving Ceremony for the Beyond the Blue Essay Writing Competition, held at the Auditorium of the IMA located on Hilltop Lane, Chaguaramas.

Congratulating the students, IMA Director (Ag) Dr. Rahanna Juman called on the students to "influence your parents, your schools and your communities to conduct their lives in a manner that supports a healthy and sustainable marine environment." Speaking with the IMA's Communications' team after the Prize-Giving Ceremony, the Competition's winner also encouraged citizens of Trinidad and Tobago to, "Think of themselves as part of the environment rather than the environment as a resource." She noted that the environment sustains us all and that human beings are as part of the ecosystem as other elements in the environment and so must learn to coexist in harmony with the natural world.

The Essay Writing Competition came at the culmination of the three-day Beyond the Blue marine environmental exhibition which was held at NALIS Port of Spain during the period 17th – 19th September 2019. Participants were exposed to issues relating to ocean health, climate change, wetlands and their role in the mitigation of the impacts of climate change and more, in an interactive and immersive environment using Virtual Reality.

The Competition was part of a wider public education campaign in the run up to the United Nations (UN) Decade of Ocean Science for Sustainable Development which begins in 2021. The IMA has so far hosted a radio program called Beyond the Blue and the Beyond the Blue Exhibition in recognition of World Ocean's Day as part of the initial activities to sensitize the public on the interconnectivity between oceans/ seas and human well-being and livelihood.

In 2020, the IMA will continue its education and awareness campaign in recognition of the UN's Decade of the Ocean declaration with more Beyond the Blue initiatives.

Top
First place winner, Sariah Esther Ramcharitar, receiving her prize from Coastal Dynamics

Middle
Second place winner, Ariv Bhagaloo, receiving his prize from UTC

Bottom
Third place winner, Naomi Wickham receiving her prize from IMA's Chief Information Officer, Alicia Carter-Fisher

INSTITUTE OF
MARINE AFFAIRS

established by Act of Parliament
(Chap. 37:01 of the Revised Laws of the Republic of Trinidad and Tobago, as amended by Act No. 13 of 1990).

Institute of Marine Affairs
Hilltop Lane, Chaguaramas
Trinidad & Tobago, W.I.

Phone: 634-4291
www.ima.gov.tt
imadirector@ima.gov.tt

IMAgovTT

THE BLUE CORNER

Portuguese Man-of -War on our shores

Seeing a violet coloured balloon on the shores of popular beaches such as Manzanilla Bay and Matura Bay is not uncommon during the Easter vacation period, however thousands of these free floating organisms washed up on shore during the December month in 2019. Is this the work of climate change resulting in change in ocean currents? "The jury is still out "but one thing is for sure these creatures long tentacles deliver a painful sting, which is venomous and powerful enough to kill fish and even humans in some cause if stung out at sea. For many curiosity of this balloon draped with tentacles leads to the brave or misinformed to touch this creature, in many cause they can still pack a punch even after being washed up on the shores. Each tentacle are armed with stinging cells called nematocysts which fire off was contacted. If stung pour vinegar (acetic acid) over affected area. Remove all clinging tentacles immediately using tweezers, a stick or leaves. Sprinkling the affected are with dry sand may help to see the tentacles better. Do not apply fresh water, this will cause triggered stinging cells to fire.

Man-of-Mar
Photo: Lori Lee Lum