INSTITUTE OF MARINE AFFAIRS

IMA NEWS

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Leatherback hatchlings

The future of sea turtle conservation in Grande Riviere: Unboxing the possibilities

During the 2012 sea turtle nesting season in Grande Riviere, the Institute of Marine Affairs (IMA) in collaboration with the Grande Riviere Nature Tour Guide Association (GRNTGA) conducted a preliminary investigation into the use of sand-filled wooden containers as egg incubators for leatherback sea turtle *(Dermochelys coriacea)* (Phase I). Wooden containers of varying meshed spacing were filled with sieved sand and a HOBO temperature logger inserted in the center of each clutch to monitor temperature variations over the incubation period.

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The future of sea turtle conservation in Grande Riviere: Unboxing the possibilities

This was done to determine which sand-filled containers approximated temperatures tolerable for leatherback turtle egg incubation. The containers were placed within a hatchery enclosure located in an elevated area on the Grande Riviere beach, which was neither inundated from wave surges nor subject to beach erosion. Results showed that the temperature range for all experimental containers did not exceed the frequently cited maximum thermal tolerance of sea turtle embryos of 33°C and 35°C.

Why?

Grande Riviere Beach, renowned globally for its high density nesting of leatherback sea turtles, is exceptionally unique. Although Grande Riviere Beach is currently the highest density nesting site among the three major nesting sites in Trinidad, it is subjected to significant egg clutch loss which coincides with the sea turtle nesting season. Over the years, egg loss has been caused by unpredictable beach erosion, overflow and unexpected diversion of two riverine systems associated with the beach (i.e. the Grande Riviere River and the Ferdinand River), and space limitations which lead to earlier deposited nests being destroyed by later season nesters. More recently, studies conducted by GRNTGA revealed that the hatching success of natural nests is predominantly low - a worrisome revelation. Due to the current scenario which undeniably has strong links to climate change, and the need to employ a precautionary approach to sea turtle management (recall Principle 15 of the Rio Declaration, 1992), a hatchery management programme utilising a novel incubatory device, was proposed by the IMA.

Unboxing the possibilities... a FIRST!

In 2013, IMA obtained funding from the Green Fund of Trinidad & Tobago to launch the second phase of the project (Phase II). The general objective of this phase was to investigate the hatching success of leatherback egg clutches incubated in experimental wooden containers and to compare with that of naturally laid egg clutches (i.e. on the beach). Egg clutches that were considered "at risk" of being lost or likely to become unviable due to being laid in unfavourable conditions, were utilised in the trials where they were incubated in the wooden containers in a hatchery set-up. The project was deemed a success since results from exhumations (analysis of nest contents to determine the number of egg that successfully incubated into hatchlings) revealed that hatchery nests yielded close to 40% hatching success and the temperatures within the containers facilitated the incubation of the eggs over their respective incubatory periods. This was the very first experiment of this type and was later published in the Marine Turtle Newsletter (MTN- Issue No. 142) in July 2014.

The current scenario in Grande Riviere prompted this timely research, and the technology has indeed been transferred to the GRNTGA who utilised the same incubatory device in 2014, in an effort to save the small number of Hawksbill sea turtle *(Eretmochelys imbricata)* egg clutches that are routinely dug up by leatherback sea turtles. It was encouraging to learn that the success was phenomenal with favourable hatching success being recorded by GRNTGA staff.

Research for the 2015 nesting season and beyond…

For the 2015 sea turtle nesting season, IMA with financial support from Green Fund will continue the leatherback sea turtle hatchery management programme, in order to strengthen the current hatchery initiative in Grande Riviere, improve hatchling success and quantify seasonal leatherback egg clutch loss on Grande Riviere beach using a combination of GPS and beach profiling techniques. It is anticipated that the technology can be transferred to other sea turtle nesting beaches in Trinidad & Tobago where egg loss is pervasive and unpredictable.

Turtle hatchery setup at Grand Riviere

As the negative effects of climate change become more extreme and apparent in the years ahead, more directed interventions may become necessary; the best options will likely be site-specific and will depend on environmental, social, economic, and cultural conditions at a particular location. Concerted efforts like these will be required across the globe to reduce the direct negative impacts and to increase the resilience of sea turtle populations to a rapidly changing climate.

Prepared by: Rachael Shoy
Research Officer

Sargasssum Fact Sheet

- Have you noticed an occurrence of greater than normal amounts of sargassum on your beaches in recent years?
- Has it caused problems for you or local communities?

During 2011, massive quantities of pelagic sargassum occurred throughout the Caribbean, impacting aquatic resources, fisheries, shorelines, waterways, and tourism. A similar event occurred in 2014 and continues in 2015.

What is it?
Pelagic sargassum is a brown alga, or seaweed that floats free in the ocean and never attaches to the ocean floor. These free-floating forms are only found in the Atlantic Ocean. Sargassum provides refuge for migratory species and essential habitats for some 120 species of fish and more than 120 species of invertebrates. It's an important nursery habitat that provides shelter and food for endangered species such as sea turtles, and for commercially important species of fish such as tunas. There are two species of sargassum involved in the sargassum influx: *Sargassum natans* and *Sargassum fluitans.*

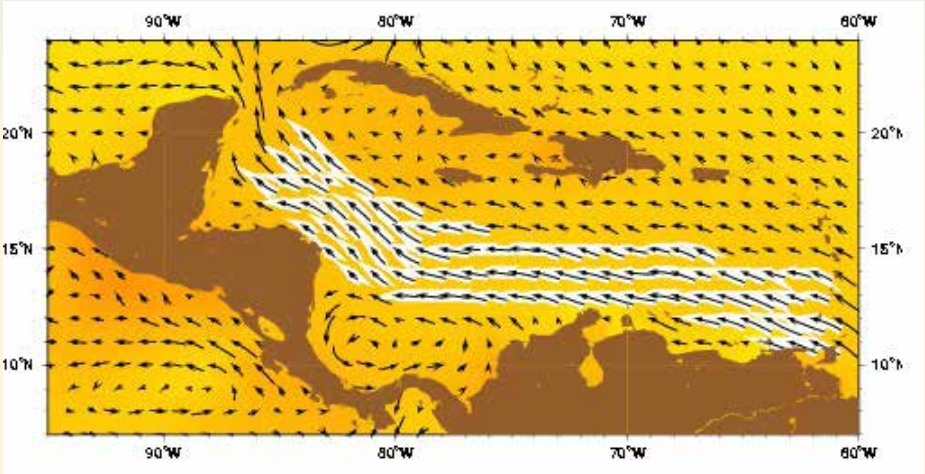
Photo: J. Franks

Where does it come from?
Sargassum travels on ocean currents. Scientists are able to determine where the sargassum comes from by back-tracking from its stranding location using ocean models and data on movements of satellite trackers that are deployed at sea. It is believed that the recent influxes are related to massive sargassum blooms occurring in particular areas of the Atlantic, not directly associated with the Sargasso Sea, where nutrients are available and temperatures are high. The sargassum consolidates into large mats and is transported by ocean currents towards and through the Caribbean.

Will the sargassum influx occur every year?
We don't know for sure if it will happen every year, but currently proposed efforts to develop prediction and alert systems would help answer this important question. Signs from the Eastern Caribbean so far this year are that we'll be seeing sargassum in the region periodically throughout 2015. Some scientists associate the cause of sargassum with higher than normal temperatures and low winds, both of which influence ocean currents, and they ascribe possible links to global climate change.

What can we do?

- Hand-raking and removal is advised as opposed to machinery that may remove sand and put the beach at risk of erosion;
- Clean-up schedules should be at low tide;
- Applying any chemicals to Sargassum makes things worse and is damaging to reefs and fish;
- Collecting the plants from sea is difficult in practical terms and threatens the living ecosystem in these floating plants;
- Sargassum can be used as mulch or compost on property – spread plants out, allow salt to wash out in the rain and mix with manure and soil;
- Patience is required. Sargassum is not marine debris, it plays a role in beach nourishment shoreline stability.



oceancurrents.rsmas.miami.edy

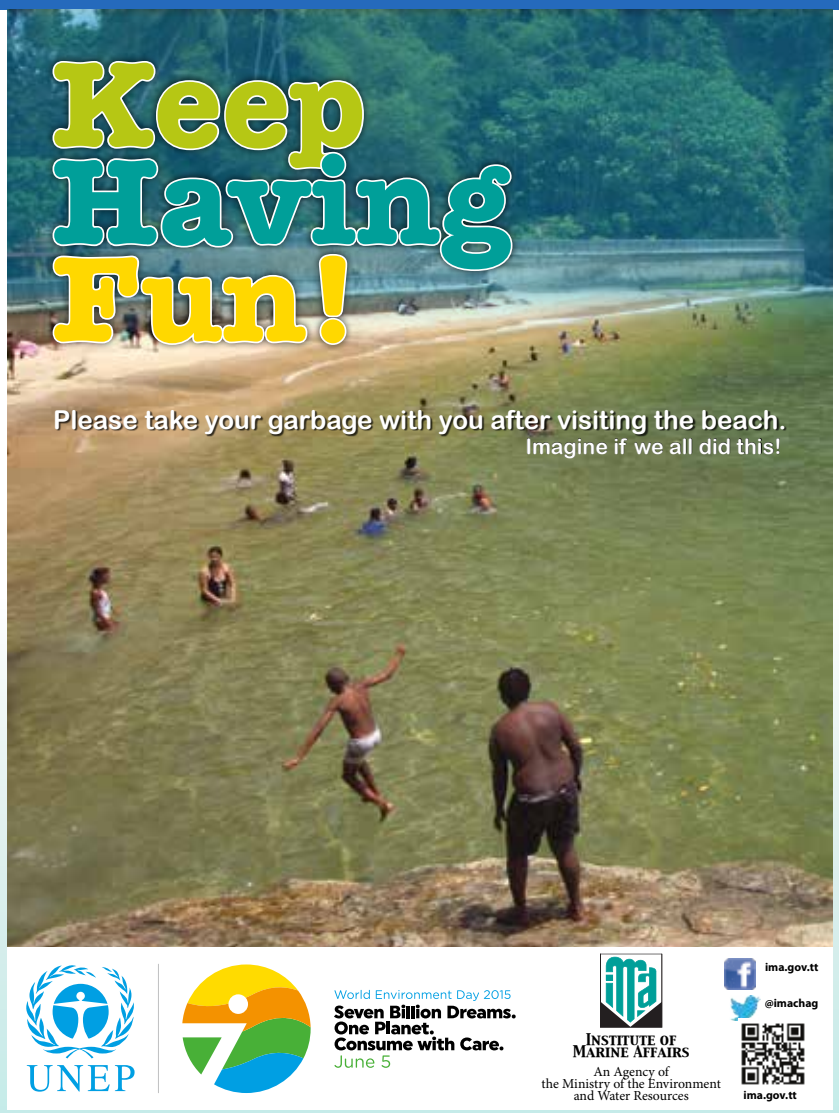
Doyle, E. and J. Franks. 2015
Sargassum Fact Sheet.
Gulf and Caribbean Fisheries Institute

WORLD OCEANS DAY 2015
Our Oceans- Ours to Protect and Preserve

The current abundance of Sargassum seaweed onto the shores of Trinidad and Tobago has brought into sharp perspective how close the citizens of island nations are linked to the ocean. Coastal inhabitants and nearshore activities are facing the challenges of dealing with this tide of seaweed that almost seems inexhaustible. We now know where the scientists believe the Sargassum has originated from (articles published in the Tobago News 20th May and Daily Express 21nd May 2015) but the cause is still under investigation. So the question begs, "Do we really need the Ocean?"

Medicine for treating cancer, spa treatments, salad dressing, sushi, beer, soy milk, air fresheners, toothpaste, peanut butter, yogurt, chocolate, the list goes on - you don't need to live near the beach to be connected to the ocean. Oceans and coasts affect people's lives every day, around the world way beyond what washes up onshore.

We Are All Connected To Oceans via the air we breathe. Oceans are a critical player in the basic elements we need to survive. Ocean plants produce half of the world's oxygen, then these amazing waters absorb nearly one-third of human-caused carbon dioxide emissions. Oceans also regulate our weather and form the clouds that bring us fresh water.



The food on your plate: Oceans provide the primary source of protein for more than one billion people. Besides seafood, oceans are connected to what you eat in many more ways. Seaweed extracts are used as food additives to help thicken and stabilize mixed ingredients to keep them from separating. Plus, 36 percent of the world's total fisheries catch each year is ground up into fishmeal and oil to feed farmed fish, chickens and pigs.

The items in your medicine cabinet: You'll find ocean ingredients flowing out of your medicine cabinet in everything from shampoos and cosmetics to medicines that help fight cancer, arthritis, Alzheimer's, heart disease, viruses and other diseases.

Jobs and the economy: Healthy marine habitats like reefs, mangroves and wetlands help protect coastal communities from hurricanes and storm surges. Trinidad and Tobago's economy is based on minerals that are extracted from the seafloor. Island economies of the Caribbean depend on the aesthetic of their marine environment to lure tourists to their shores. One in 10 vacations involve going to a beach and enjoying recreational opportunities such as fishing, boating, surfing, diving, whale watching, and other aquatic pursuits.

The Ocean is the heart of our planet: An irreplaceable liquid resource with inhabitants that ask very little of us, yet provide humans with a lifeline for survival. As the international community recognizes World Oceans Day on 8th June, the 2015 theme "Healthy Oceans, Healthy Planet" resonates a key message that seems to have been abandoned in the myriad of conservation efforts over the years. The trouble with disregarding this message though is that there can be severe consequences on the marine environment and human health.

The Ocean has become a garbage dump: It is the final receptacle of most inland produced pollution and waste. While a majority of the waste sinks, a significant amount floats and winds up on the world's beaches. Six billion kilos of plastic annually is dumped in the oceans. The list of garbage includes plastic bottles, shoes, abandoned fishing nets, cigarette butts and lighters. It takes 100 -1000 years for plastic to decompose. The plastics poison the ocean, and threaten the survival of marine life.

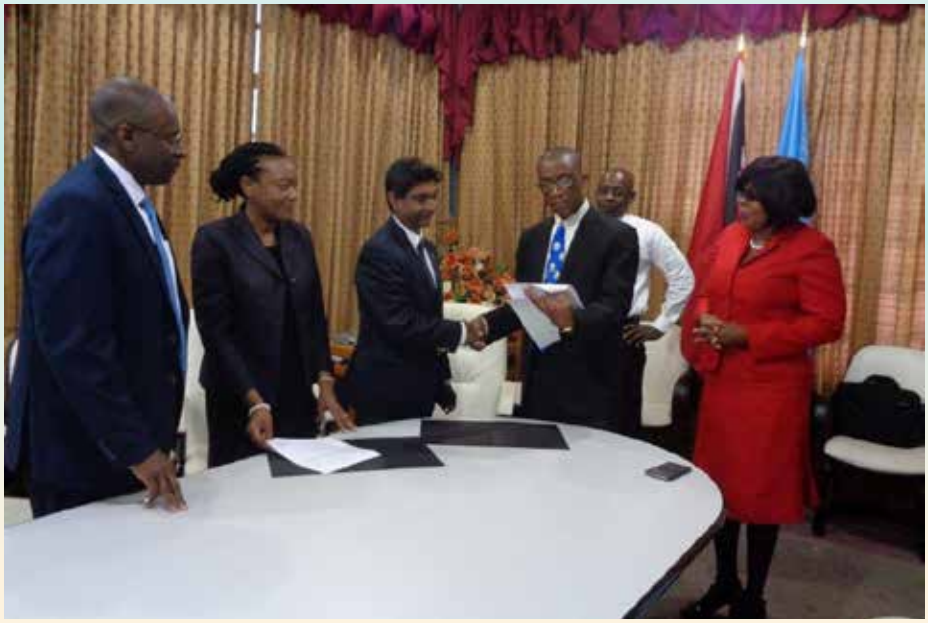
In 2010 a garbage patch was discovered in the Atlantic Ocean, hundreds of kilometres off the North American coast. Tiny pieces of garbage, each less than a tenth the weight of a paper clip, make up most of the debris. Waves sometimes carry the plastic as deep as 20 metres. Plastic this small can end up in the food chain posing health risks to fish, seabirds, other marine animals and ultimately could reach people who consume seafood.

Just one look along any coast of Trinidad and Tobago and the evidence of our plastic history is there at the high tide line. Yet people seem to have become very tolerant of seeing garbage on our beaches. The unsightly, unhygienic, mounds of plastic waste, are despoiling our coasts and choking our seas.

Given the importance of the ocean to us as a food source, for recreation and medicine to name a few, surely we can appreciate that it is a necessity for our existence, and keeping oceans healthy, keeps people healthy. For 2015 World Oceans Day, as individuals we can each make a special effort to curb plastic pollution by using less of it, starting this year. It may seem a simple act, but collectively it makes a difference to the amount that ends up in the ocean.

Submitted by: Lori Lee Lum
Community Education Officer

IMA signs M.O.U. with Tobago House of Assembly



l-r: Raye Sandy, Chief Administrator THA; Dr. Beverly Foster-Hinds, OIC- Director, IMA; Professor Indar Ramnarine, Chairman, Board of Governors, IMA; Assemblyman Godwin Adams, Secretary of Agriculture, Marine Affairs, Marketing and the Environment, THA; Assemblyman Hayden Spencer, Assistant Secretary of Agriculture, Marine Affairs, Marketing and the Environment; and Nevlin Renwick, Administrator, THA

On Monday 22nd June, 2015 the IMA and THA signed a Memorandum of Understanding (MOU) in Tobago. The MOU focuses on the establishment of a marine research field station in Belle Garden, Tobago by the IMA.

Assemblyman Godwin Adams, Secretary of Agriculture, Marine Affairs, Marketing and the Environment was on hand to peruse the documents after the signing. He spoke about the significance of this initiative and the benefits to be derived by the people of Tobago, such as employment during the construction phase and skills transfer.

IMA EVENTS, ACTIVITIES and OUTREACH

REGIONAL Conference

Lori Lee Lum — Community Education Officer attended The United Nations Educational Scientific and Cultural Organization's (UNESCO) Regional Water and Education Workshop for the Caribbean from 20th — 22nd April 2015, in Kingston, Jamaica. Thirteen representatives from ten Caribbean countries attended the 3-day Water and Education Training Workshop funded by UNESCO under its International Hydrological Programme (IHP) and Project WET (Water Education for Teachers) Foundation. The objective of the meeting was to facilitate the work of educators and to promote the appreciation of, knowledge about, and respect for water. Innovative ways to get the message out and to teach others to appreciate our water resources and the actions needed to sustain it, were the focus of each day's activities.

Far right, front row - Dr. Cesar Toro, Programme Specialist, UNESCO
Far left, front row - Ms. Natalie Ferguson, Facilitator, Hydrology Consultants United

Invasive Lionfish at Emperor Valley Zoo

On Wednesday 8th and Sunday 12th April 2015, IMA hosted a booth at the Emperor Valley Zoo to raise awareness about the Lionfish in Trinidad and Tobago. A live Lionfish was on display and persons were educated about this Invasive Species. Lionfish are voracious predators known to eat native fish and crustaceans, including both ecologically and economically important species like grunts, snapper, grouper, and cleaner shrimp. Lionfish are not known to have any predators in the Atlantic Ocean, and are equipped with venomous spines, which can cause painful stings to humans. Lionfish are native to the Indo-Pacific region.

IMA staff raising Lionfish awareness at Emperor Valley Zoo

IMA participates at Knowledge Fair

Visitors at the IMA's booth

The United Nations Development Programme through its Global Environment Facility Small Grants Programme (GEF SGP) funded one of the largest expos for environmental projects in Trinidad and Tobago with the theme "Igniting Global Envirominds – Transforming Today for a Sustainable Tomorrow."

On 28th and 29th May 2015, IMA through its IC Department participated at the UNEP/FEP Knowledge Fair at Arthur Lok Jack Graduate School of Business. The GEF Small Grants Programme was established in 1992 at the Rio Earth Summit, with the aim of finding sustainable ways to halt the destruction of irreplaceable natural resources and pollution of the planet It does this by providing financial and technical support to NGO's, CBO's and other civil society organizations that seek to address issues of pollution, land degradation, climate change, biodiversity conservation and threats to international waters.

School Outreach - Lionfish Awareness

Continuing the Lionfish Awareness campaign initiated in Tobago in January, presentations were given to 233 students in primary schools from Matura to Matelot from 12th – 15th May 2015. Lionfish lunch kits and drawstring bags were given to the students as tokens. Additionally, a workshop was held at the Grande Riviere Visitor Centre to show community members how to handle and de-spine Lionfish.

Monte Video Primary School

Cumana Seventh Day Adventist School

Schools visited were:

- Rampanalgas St. Anthony R.C.
- Grande Riviere AC
- Matelot RC
- Monte Video Government
- Sans Souci RC
- L'Anse Noire Moravian
- Toco Anglican
- Cumana SDA
- Salybia Government
- Matura Government

Climate Change workshop - Tobago

On Tuesday 26th May 2015, the IMA and Inter-American Development Bank (IDB) hosted a Climate Change workshop at Le Grand Courlan Resort and Spa, Tobago. The objectives of the workshop were to discuss Integrated Coastal Zone Management and Climate Change as it relates to Small Island Developing States and the sustainable management of Trinidad and Tobago's coastal resources and activities.

The IMA has been working with the IDB through the IDB funded project entitled "Piloting the Integration of Coastal Zone Management and Climate Change Adaptation in Tobago.

Dr. Juman presents project report documents to the Honourable Orville London, Chief Secretary, THA

The Honourable Orville London, Chief Secretary, THA, highlighted that is important to protect our beaches in light of the impacts of climate change. During his feature address at the workshop he stated there is need for collaborative and resolute action to preserve the island's natural heritage.

IMA at NIHERST Science Centre

IMA participated in NIHERST's Science Week from 21st - 23rd April 2015 at the NIHERST/NGC Science Centre, D'Abadie.

Approximately 100 students, teachers and adults from primary and secondary Schools visited the booth.

Promoting the IMA at the NIHERST Science Centre

The IMA continues to use these events to promote the importance of ocean services. Persons visiting the booth learned that coastal waters are extremely productive biologically and are more directly affected by human activity than any other part of the ocean.

Regional Environmental Information Network Conference

Dr. Sakura-Lemessy was nominated to sit on a panel of experts to complete the GEO 6 (6th Global Environmental Outlook) Report held in Panama City, Panama from 4th—8th May 2015. The nomination was accepted by the Head Office of the United Nations Environmental Programme (UNEP) in Kenya and Dr. Sakura-Lemessy was appointed to serve as Coordinating Lead Author, Water, of the regional assessment for Latin America and the Caribbean.

During this Session, Dr. Sakura-Lemessy was appointed to the position of Vice-Chairperson on the Board of Officers of the UNESCO IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE). Dr. Sakura-Lemessy will serve on the new Board of the Sub-Commission for the period 2015 to 2017, together with other Sub-Commission members elected from Mexico, Panama and the United States. The Session sought to review the state of development of major IOC programmes in the Caribbean region and adjacent areas. Dr. Sakura-Lemessy was elected to represent Latin America and the Caribbean.

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THE BLUE CORNER

"Try to leave the Earth a better place than when you arrived."- Sidney Sheldon

Fiddler Crab

The Fiddler Crab, also known as a "calling crab", may be one of approximately 100 species of semi-terrestrial marine crabs which comprise the genus *Uca*.

They are found in mangroves, salt marshes, and sandy or muddy beaches, and are easily recognized by their distinctively asymmetric claws.

Fiddler Crabs communicate by a sequence of waves and gestures. Males have an oversized claw or chela, which is used in clashes of ritualised combat or courtship over a female and signal their intentions between members of the same species. The movement of the smaller claw from ground to mouth during feeding explains the crab's common name; it looks as if the animal is playing the larger claw like a fiddle.

Reference

http://news.nationalgeographic.com/news/2008/11

Fiddler crab waving its oversized claw *Photo Credit: Fayard Mohammed*

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