

ICZM NEWS

MARCH 2020

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Trinidad: A declining refuge for the Leatherbacks

Ruqayyah Thompson
Institute of Marine Affairs

The most recent status assessment of the Northwest Atlantic (NWA) Leatherback Turtle (*Dermochelys coriacea*) published by the Wider Caribbean Sea Turtle Conservation Network (WIDECAST), reveals an alarming, declining trend in the population of the turtles throughout its range, with the lowest rate of decline in Trinidad. The leatherback turtle is a flagship species for Trinidad and Tobago, raising support for local conservation efforts and contributing to both our cultural identity and economy. It has been proposed that Trinidad may represent the best chance to reverse the decline of the NWA Leatherback Turtles, due to strong, local conservation efforts and substantial long-term protection of nesting beaches at Grande Riviere and Matura.

Leatherbacks are the largest turtles in the world, growing up to seven (7) feet long and exceeding 2000 lbs in mass. They are reptilian relics, the only remaining member of a family of turtles which traces its evolutionary roots back more than 100 million years, existing in their current form since the age of the dinosaurs! They are the only species of sea turtle that lack scales and a hard shell and are named for their tough, rubbery skin. Once prevalent in every ocean excepting the Arctic and Antarctic, the leatherback turtle population is rapidly declining worldwide. While difficult to monitor because adult female leatherbacks frequently nest on different beaches, the National Oceanic and Atmospheric Administration (NOAA) estimates that the global population has declined by 40%.



Photo by Jolo Diaz from Pexels

While the Pacific leatherback population is thought to be most at risk of extinction, the Atlantic leatherback population was previously reported to be abundant and generally increasing. However in 2018, according to WIDECAST, data collected from 17 countries and territories in the region, showed statistically measurable declines in leatherback turtle nest abundance over time, particularly in the past decade, highlighting the importance of timeframe when evaluating abundance trends. Significant declines were observed in Suriname, Costa Rica and St. Kitts, but the regional results were driven by declines in French Guiana, which like Trinidad is a primary nesting colony with more than 1000 adult females nesting annually.



Leatherbacks are currently listed as vulnerable by the International Union for Conservation of Nature (IUCN), with the NWA Leatherback Turtle population re-classified in 2019 as endangered. Leatherbacks face several threats, with the primary global threat being fishery by-catch. Vessel strikes can also injure or kill turtles. Seas turtles have also been intentionally killed for their meat and skin for hundreds of years and their eggs are still harvested, despite conservation efforts. Leatherbacks mistake marine plastic for their favourite food – jellyfish- and can become trapped in marine debris including derelict fishing gear. Habitat loss due to coastal erosion possibly exacerbated by climate change has been reported in French Guiana as a driver of leatherback turtle population decline. Other human-related changes in the coastal zone also affect nesting, including beachfront lighting and shoreline stabilisation works.

Trinidad and Tobago has one of the largest nesting populations of leatherbacks in the world, with over 6000 leatherback turtle nests on our beaches every year, from March to August. Leatherbacks are the most numerous sea turtle species nesting in Trinidad and Tobago, with the most important nesting sites in Trinidad being Grande Riviere, Matura and Fishing Pond as well as Turtle Beach in Tobago. The country is well known globally for its leatherback turtles by both the scientific community and nature enthusiasts. Fortunately, long-term, dedicated, community-led conservation efforts by Nature Seekers, Turtle Village Trust (TVT), Grande Riviere Nature Tour Guides Association, Fishing Pond Turtle Conservation Group, and Save Our Seas Turtles-Tobago have contributed to maintaining the country's leatherback turtle population. On Trinidad's Northeast coast, the contribution of the leatherbacks to the local economy and livelihoods is very much visible even to the average passer-by, with locals involved in turtle data collection, guided tours, community management, handicraft and other services. Public outreach and eco-tourism programmes sustain more than 20,000 visitors every year.

With one of the largest remaining leatherback colonies in the region, Trinidad and Tobago plays a critical role as a refuge for the leatherbacks, possibly determining the survival or collapse of the entire NWA Leatherback Turtle population. Leatherback turtles are one (1) of ten (10), of the country's listed Environmentally Sensitive Species (ESS) under the ESS Rules 2001, and Trinidad and Tobago is also signatory to several international conventions which require ESSs to be protected including the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as well as the Protocol concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Wider Caribbean Region (SPAW Protocol).

This year, while the flaunting of regulations and the threats usually posed by beach activities to the nesting leatherbacks have been abated by the 'stay at home' measures put in place by the Government to combat the global Coronavirus pandemic, the leatherbacks will be challenged by the Sargassum seaweed which is washing ashore and clogging beaches that are essential for nesting. While the challenges faced by the Leatherbacks are continually evolving, to reverse the declining population trend locally, WIDECASST recommends the characterisation and reduction of man-made threats including the reduction of fisheries by-catch; the identification and mitigation of threats to nesting habitats; providing support to active enforcement of all sea turtle protection regulations as well as supporting scientific research and monitoring programmes. These measures will not only protect an important natural resource, but will help the country maintain its global position as a refuge for the leatherbacks.



Sargassum – A Visitor to Our Beaches

Rahanna Juman PhD
Institute of Marine Affairs

In April, most locals make plans to go to the beaches especially over the Easter long weekend. This year is surprisingly different. To mitigate against the spread of the Coronavirus, folks are staying home. While we are home, another visitor is washing up on our beaches, the Sargassum seaweed. Large quantities of Sargassum have become an annual visitor since 2011, with massive piles recorded in 2011, 2015 and 2018.

Pelagic Sargassum is a brown alga or seaweed that forms large floating mats often referred to as “golden tides”. Field surveys and satellite maps have indicated that Sargassum blossoms naturally in the warm waters of the Atlantic Ocean; the Tropical South Atlantic and in the North Atlantic including the Sargasso Sea. Since 2011, there have been several episodes of unusual quantities of two species of Sargassum, *S. natans* and *S. fluitans*, reaching the coasts of many of the islands of the Caribbean Sea including Trinidad and Tobago.

Where is it coming from?

In 2013 satellite images, Sargassum was seen concentrated in the tropical North Atlantic over 600 km offshore from South America, to the north and west of the mouth of the Amazon River. For about 18 months prior to landing in 2013, back traces from the Sargassum sighting location were made using a high-resolution numerical ocean current model which pointed to waters near the North Equatorial Recirculation Region (NERR) (Johnson et al. 2013). Sargassum may be aggregating in the NERR region and blooming there. More recent satellite images revealed increasing trends in Sargassum amounts in both the tropical Atlantic and the Caribbean through 2018. The currents that have resulted in the movement of more Sargassum into the Eastern Caribbean and Northwest African coastlines are not clear at this time (UNEP, 2018).

Causes of Sargassum invasion

According to the UNEP 2018 White Paper on Sargassum, there is no evidence that river discharge and nutrients from rivers has stimulated new growth of Sargassum. The tropical Atlantic has for ages received rich nutrient inputs from some of the largest rivers in the world, including the Amazon, Orinoco, and Congo Rivers. There is also upwelling - which provides colder, nutrient rich water from the deep to the surface, in the equatorial regions of the Atlantic, and along tropical Africa and South America. The tropical Atlantic also receives dust from the Sahel in Northwest Africa which is rich in iron. While these nutrients may enhance the growth of Sargassum, these inputs have not likely varied

enough to be the primary cause for the Sargassum impacts on the greater Caribbean region in recent years.

Further research is required to understand the possible causes for the proliferation of massive amounts of Sargassum in recent times, but the following (still untested) hypotheses have been advanced:

- Warming and changing of ocean temperature due to long-term cycles such as the Atlantic Meridional Oscillation or AMO, and/or global climate change
- Changes in ocean circulation

The following causes are the subject of substantial speculation, but whether they play a role is unclear and perhaps even unlikely:

- Increased land-based nutrients and pollutants (which include nitrogen-heavy fertilizers and sewage waters) washing into the ocean water.
- Flow of nutrients from the Congo River, Amazon River, and Northwest Africa iron-rich dust.
- Maritime traffic as a potential introduction vector pathway.

Impacts of Sargassum blooms

While we still do not know with certainty why so much Sargassum is coming to our shores, its impacts on our shoreline have been felt. Massive Sargassum deposits on beaches have negatively impacted the socioeconomic aspects of local livelihoods (tourism, fishery industries- ports) of coastal communities. According to the UNEP 2018 White Paper, some areas of the Caribbean have witnessed large declines in tourism, such as a 35% drop in arrivals in 2018 in Mexico. Sargassum blooms resulted in reduced access to fishing grounds and disrupted fishing operations. In Tobago mats of up to 0.6m thick engulfed the beaches with the most notable incident occurring in July 2015. Labelled a natural disaster by the Tobago House of Assembly, over \$TT 3 million was spent on clean-up efforts.

The ecological impacts of the invasive seaweeds on our coasts is still being assessed, but the assumption is that massive influx of Sargassum seaweed has resulted in potential disturbance of marine life (dead fish and sea turtles have been found when Sargassum washes onto the shore in massive quantities, showing the potential correlation), beach fouling, and coastal dead zones. The accumulation and decay of large amounts of

Sargassum in the water can result in anoxia and the release of poisonous hydrogen sulphide, potentially causing the death of marine life. Entanglement of foraging turtles in the Sargassum rafts, and blockage of turtle nesting sites by the seaweed that reaches the beach also represents a threat to turtle populations, with Trinidad and Tobago being one of the largest Leatherback turtle nesting site in the Atlantic.

To better cope with the complexity of the massive Sargassum landings, a multi-stakeholder strategy using an integrated approach is required. In 2015, the Institute of Marine Affairs (IMA) in conjunction with the Global Environmental Facility Small Grant Programme (GEF/SGP) held multi-stakeholder consultations. These consultations resulted in the development of a National Sargassum Response Plan that outlines a suite of potential management actions and synchronised approach to addressing the massive Sargassum incursion. The objectives and components of the draft Response Plan included the development and implementation of an early warning system, communication strategy as well as coordinated clean-up efforts and emergency response teams, research and monitoring. This plan is currently being updated by the Inter-Ministerial Integrated Coastal Zone Committee using the latest scientific findings and recommendations.

Some actions have already been implemented consistent with the draft Response Plan such as the establishment of a local Sargassum network. Once information, including satellite imagery, is shared on the Regional Sargassum network through Specially Protected Areas and Wildlife – Regional Activity Centre- United Nations Environment Programme- Caribbean Environmental Programme SPAW/RAC UNEP-CEP Project Sargassum, the information is disseminated through the local network to initiate necessary action. Research is also being conducted by the University of Trinidad and Tobago and University of the West Indies to determine commercial uses of the seaweed such as conversion into manure, fertilisers, fungicides and fish food.

The Tobago House of Assembly through the Tobago Emergency Management Authority (TEMA) and Department of Environment have developed their response plan, and have identified sites for storage/disposal in the east, central and southwest Tobago with appropriate designated perimeters to minimise impacts on terrestrial plant life and to minimise the impacts of odours. The Sangre Grande Regional Cooperation which technical assistance from the IMA has also identified potential storage/disposal sites within the Cooperation. The IMA has also prepared and disseminated public education and awareness material on Sargassum.

So this year while we sit at home, our coastlines are still being inundated with Sargassum. National and local government are directing funding and resources to prevent a potential public health crisis due to the Coronavirus. The Sargassum is acting as a deterrent to any potential beach-goers, thereby inadvertently supporting the governments 'stay at home' measures. Meanwhile, our turtle nesting season has started and will run from March-August. It appears that for now, the turtles will have to overcome Sargassum-clogged beaches largely out of the view of the public eye.



Using Participatory GIS (PGIS) to inform management of bycatch in trawl fisheries in Trinidad and Tobago

Judy-Ann Bennett

Project Coordination Support, REBYC - II LAC Project, Fisheries Division;

Lara Ferreira

Fisheries Officer, Fisheries Division



Photo: By Kalamazadkhan - Own work,
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In Trinidad and Tobago, the shrimp and groundfish resources are exploited by artisanal, as well as non-artisanal trawl fleets operating out of ports in the Gulf of Paria, Trinidad. According to statistics of the Food and Agriculture Organization of the United Nations (FAO), in an average tropical shrimp trawl catch, the quantity of bycatch is between three (3) and fifteen (15) times more than the targeted species. Most of the bycatch species are discarded at sea. A Shrimp Trawl Bycatch Value Chain Study conducted by a team from The University of the West Indies (St. Augustine) led by Consultant Dr. Sharon Hutchinson estimated the mean monthly bycatch landings at Orange Valley (one of the major trawl landing sites) at 38,404.9 kg, with over two million kilograms (2,483,034 kg) being landed between 2010 and 2014 from about 40,671 trawl fishing trips. The fish bycatch landed comprised about twenty-four (24) different species, with cro cro, mixed fish, white/silver salmon and snapper being the most abundant species groups. The study also demonstrated that there is a loss of potential income to fishers and other actors along the value chain as a result of the discarding at sea of unwanted catch. A large proportion of the discards comprise juveniles of species, many of which are exploited in the adult stage by other non-trawl fishing gears such as gillnets. A preliminary estimate of this potential loss of income for a non-artisanal double-rigged trawler, fishing in the Gulf of Paria in 2017 was calculated at TT\$18,597 per trip (based on 35,066 kg discarded per trip). In addition, for commercial species alone, the juveniles discarded were worth TT\$66,323 in lost future income per trip (at prevailing market prices) for a double-rigged trawler (This is the potential value of the discards per trip, if left in the sea to mature and then captured at a later time). Use of a Participatory Geographic Information System (PGIS) Approach for the collection, mapping and spatial analysis of fisheries data is one of the tools being developed by the Ministry of Agriculture, Land and Fisheries (MALF) to effectively manage the trawl fishery. Utilizing PGIS mapping tools, the spatial

distribution of shrimp and groundfish stocks in the Gulf of Paria can be identified and measurements can be put in place to help to address the issue of bycatch discards, among others, in the trawl fishery.

Under the Global Environment Facility (GEF)-funded FAO project "Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries" (REBYC-II LAC), a Consultant, Dr. Kim Baldwin from The University of the West Indies (UWI), Cave Hill, Centre for Resource Management and Environmental Studies (CERMES) was contracted to work with the MALF's Fisheries Division alongside its GIS Unit to apply a PGIS approach among a wide range of stakeholders to collaboratively identify and convert existing spatial data and information; collect local knowledge on the shrimp fishery and Gulf of Paria ecosystem; and construct a marine geodatabase in line with the principles outlined in an ecosystem approach to fisheries (EAF) which takes into consideration biological, social and economic factors in managing fisheries.

From July to December 2018, GIS spatial information in the form of maps, charts and datasets were obtained from various regulatory and research agencies including, but not limited to, the Trinidad and Tobago Coast Guard, the Institute of Marine Affairs (IMA) and the Environmental Management Authority (EMA). Fishers from the fishing communities of Orange Valley, Cacandee, San Fernando, Otaheite and from the landing site at Sea Lots, Port of Spain were engaged to map fishing areas, sediment types and critical habitats, as well as environmental issues, in the Gulf of Paria. A number of participatory research methods (i.e. preliminary assessment, key informant interviews, participatory mapping exercises, seasonal calendars, historical timelines) were utilized to collect a range of socio-economic, habitat, resource and space-use information and fill identified data gaps.



Key Informant interview mapping exercise conducted at San Fernando Landing Site

The data sets collected, digitized and displayed as maps include the following:

- Demarcated fishing zones around Trinidad
- Landing sites and fishing areas / fishing grounds with local area names used by fishers
- Coastal marine management areas
- Jurisdictional boundaries
- Marine habitats by substrate types
- Coastal habitats
- Coastal marine resources – seagrass and mangrove swamp habitat
- Coastal marine threats
- Groundfish and other fishery resources
- Coastal marine infrastructure
- Shrimp trawling areas for the artisanal and non-artisanal trawler types and distribution of the various shrimp species
- Other coastal marine resources highlighting nursery areas and sites where bait, birds, crabs and oysters are found.

Validation exercises were held with stakeholders, including fishers, in January 2019 to determine the accuracy of the data captured in the GIS. Various issues and conflicts were highlighted, documented and discussed during the mapping and validation exercises, among them the issues of pollution and overfishing in the Gulf of Paria. A number of management measures were also proposed by the fishing industry and other stakeholders, including seasonal closures and zoning to protect critical fish habitats.

The Fisheries Division, with the technical support of the GIS Unit of the MALF, will continue to build on this PGIS database which currently focuses on the trawl fishery in the Gulf of Paria. The PGIS facilitates the integration of fisher local knowledge with conventional scientific data, allowing for a broader and more comprehensive understanding of human-environment interactions occurring across the range of users within the Gulf of Paria ecosystem in Trinidad. This in turn will facilitate the development of equitable and socially acceptable management

measures that would allow fishers and other users of the ecosystem resources to obtain a livelihood while protecting the resources for future long-term use.

References:

Baldwin, K. 2019. Applying Participatory GIS (PGIS) to support an Ecosystem Approach to Fisheries (EAF) for the shrimp resources and trawl fishery in the Gulf of Paria, Trinidad. Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries (REBYC-II LAC), Food and Agriculture Organization and the Centre for Resource Management and Environmental Studies, The University of the West Indies, Cave Hill Campus, Barbados. 64 pp.

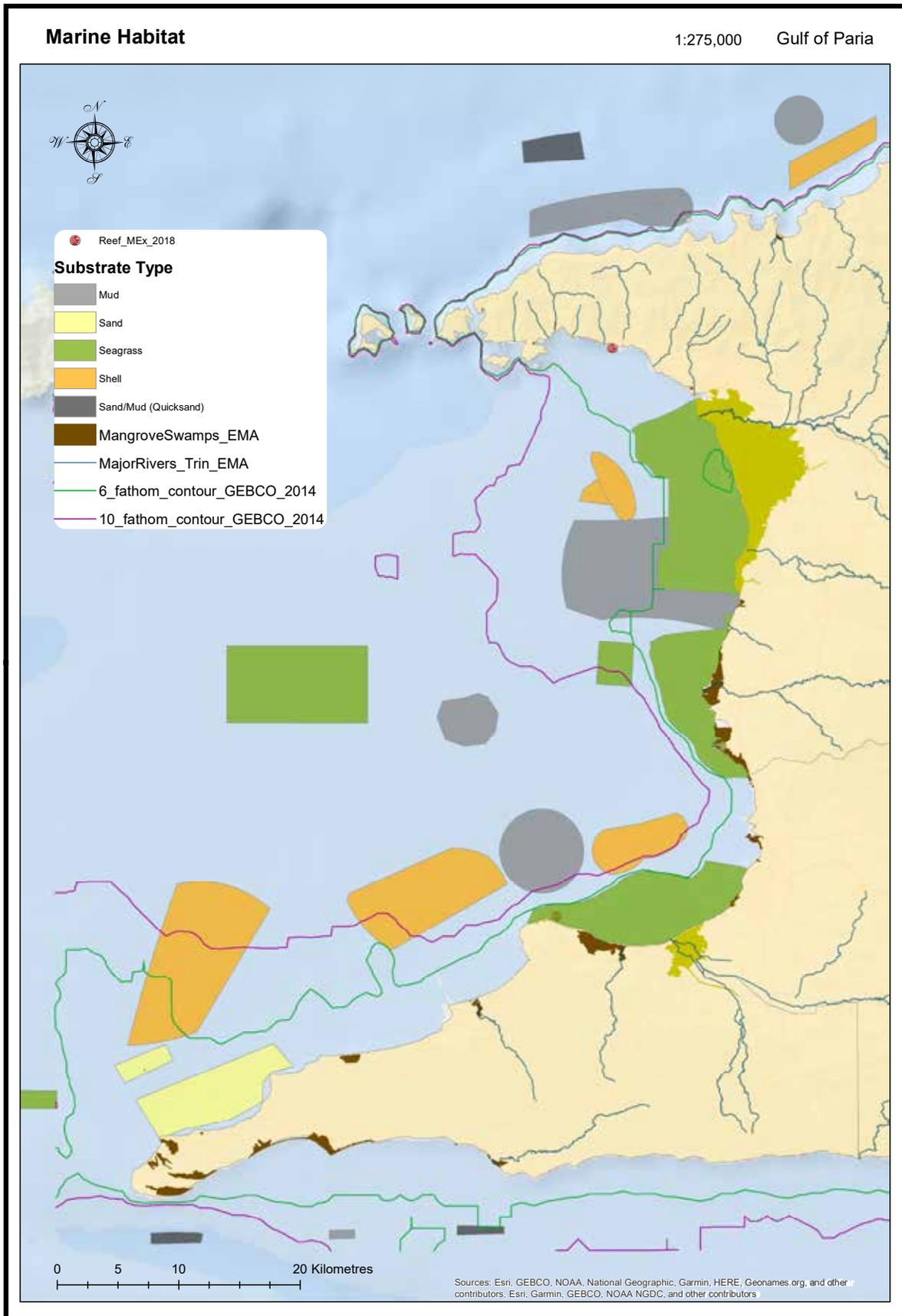
FAO REBYC - II LAC website:

<http://www.fao.org/in-action/rebyc-2/overview/en/>
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Ferreira L. & S. Soomai (2013) Ecosystem Approach to Fisheries (EAF) Baseline Report for the Shrimp & Groundfish Fisheries of Trinidad and Tobago. Fisheries Division, Ministry of Food Production

S. D. Hutchinson, C. Carmichael, R. Cozier, D. McFee, W. Archer, and K. Slinger. (2018) Shrimp Trawl Bycatch Value Chain Report on Trinidad – Draft Report. The University of the West Indies: St. Augustine, Trinidad and Tobago.

PGIS Output:
Substrate types in the
Gulf of Paria based on
local knowledge





Plastic Pollution at Chacachacare Island-Trinidad

Shantel Charles
Institute of Marine Affairs

“Our past, our present, and whatever remains of our future, absolutely depend on what we do now.”- Sylvia Earle, Oceanographer

The beautiful island of Chacachacare, once a hidden treasure, is now invaded by endless plastics which pile up along the coastlines, creating an unpleasant scene. This unfortunate occurrence is a deterrent to visitors, affecting the island's ecotourism potential.

Plastic pollution is considered as one of the most significant factors affecting marine life, as plastics continue to accumulate in the ocean and coastlines. Approximately 80% of marine litter is plastic debris from land-based sources. The availability, durability and the chemical composition of plastics, as well as improper disposal, have resulted in a high level of plastic pollution in the environment; as approximately 13 million tons of plastic are discarded into the ocean annually (Jambeck et al., 2015).

Mortality, ingestion, entanglement and bioaccumulation within marine food webs, are the most direct effect plastics have on marine species; resulting in loss in biodiversity and declining ecosystem health. The chemical composition of plastics and the chemical additives used in plastic production cause some plastics to be resistant to the natural processes of degradation.

Globally, plastic production has increased tremendously from 1.5 million to over 335 million tons annually (Plastics Europe, 2017). Human dependency on plastics through packaging materials, single use products and cosmetics increases daily. These can be categorized into primary plastics such as bottle caps, plastic bags and fishing nets, and secondary plastics which result from the degradation of primary plastics. Plastics can be further defined based on its size into micro, meso, nano, macro and mega-plastics (GESAMP, 2019). When plastics degrade, they become microplastics, which fish and humans inadvertently consume. The consumption of microplastics have the potential to cause cancers, immune disorders, birth defects and other health complications in humans.

Plastic pollution adversely affects our environment, wildlife and well-being with severe environmental and economic consequences. This is a result of human negligence, inadequate waste management services and lack of education and awareness. From a socio-economic perspective, the effects of plastic pollution directly affect coastal tourism and impacts other related industries thus resulting in a reduction in the recreational and aesthetic values of the island. Other related economic expenditure includes costs associated with beach clean-up operations and litter removal as well as reduced fishing catches and replacement of damaged fishing gear.

Aside from regular beach clean-ups at Chacachacare, the best way to minimize plastic pollution is to utilize the 5R's: reduce, refuse, reuse, recycle and remove. To effectively reduce plastic pollution citizens should change their mindset and habits; where alternate options are available explore them; reuse plastics for different purposes, recycle plastics through local initiatives and educate others by raising awareness and promoting behavioural change. Furthermore, regulation through the draft Beverage and Container Bill 2012 will be utilized in efforts to reduce improper disposal and pollution. Additionally, the Integrated Coastal Zone Management (ICZM) Policy will assist in the enhancement of pollution control and waste management activities while promoting public awareness and capacity building.



What should I do if I encounter a beached whale or dolphin?

Carla Phillips Savage, DVM (Hons.), MPhil, PhD, PgC, CertAqV.

Photo Getty Images

Approximately 19 species of marine mammals have been documented in the waters of Trinidad and Tobago. As such, the public may periodically have close encounters with these animals when they wash ashore, or 'strand'. When more than one marine mammal washes ashore, it is termed a 'mass stranding'. Marine mammals that wash ashore, especially those that wash ashore singly, are typically ill. In mass strandings, there may be one or a few (perhaps severely) compromised animal(s), and due to their close social bonds, other healthy members of the group may secondarily strand. This presents a challenge since stranded marine mammal quickly deteriorate, the longer they remain beached. Nevertheless, though well-meaning, there are times when our intervention could prove more detrimental to these animal(s), since ill marine mammals are predisposed to drowning. Remember, they are mammals, not fish. They have lungs and they breathe atmospheric air. Therefore, they must be able to coordinate their body movements in order to surface to breathe before submerging again. Since ill marine mammals are often unable to do so, taking them back out into deep water without having been first examined by trained veterinary medical personnel or persons specifically trained to perform health assessments on these animals, could prove deadly. Further, ill marine mammals may be harbouring infectious organisms that may have the potential to be detrimental to humans and other animals. The public is therefore urged to avoid handling and/or consuming marine mammals that wash ashore, as this may pose a significant public health risk. The public is also reminded that marine mammals are protected locally under the Conservation of Wildlife Act of Trinidad and Tobago. Interacting with or handling these animals without a permit issued by the relevant authorities is an offense punishable by law. What then can we do to assist if we encounter a marine mammal that has stranded?

Here are some useful tips:

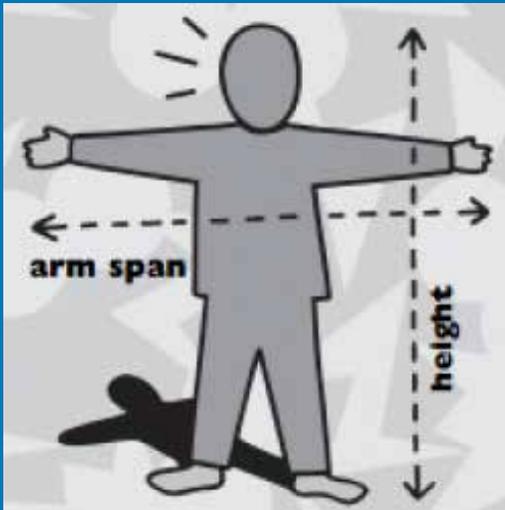
1. CALL!!!

- i. **The Wildlife Section of the Forestry Division**
 - a. Trinidad: 662-5114, 645-4288
 - b. Tobago: 639-2570, 735-4369
- ii. **The Trinidad and Tobago Marine Mammal Stranding Network (TTMMSN)**
 - a. 481-4838; 238-9576.
- iii. **The Trinidad and Tobago Coast Guard (24/7)**
 - a. 634-8824
- iv. The nearest **Police Station**

The TTMMSN is a Network with volunteers who have been specifically trained in Marine Mammal and Wildlife Medicine, Wildlife Rehabilitation, Marine Biology, Disaster Intervention, Marine Sciences and other Biological Sciences. Collectively, the Network volunteers possess the expertise to systematically coordinate and safely execute Marine Mammal Stranding Response.

- ### 2. TELL US (Have the following information available when you call):
- i. Your name and contact number.
 - ii. How many animals?
 - iii. Dead, Alive, Not Sure?
 - iv. Exact location of animal(s) (include a landmark)
 - v. Date and time of sighting.
 - vi. Describe the animal
 - a. **Colour**

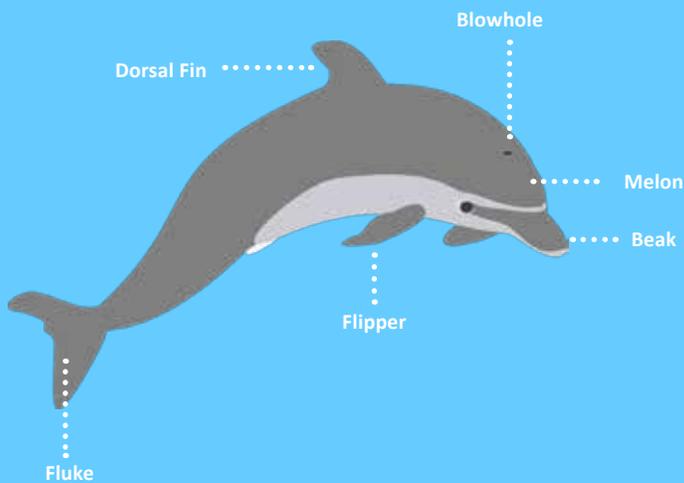
- b. **Size** (For most people, arm span is approximately equal to your height. So if you know your height, you can estimate the length of the animal(s) based on the number of your arm spans)



<https://www.howtosmile.org/resource/smile-000-000-004-314>

3. HELP THE ANIMAL:

Pay attention to these body parts:



<https://pixabay.com/vectors/dolphin-jump-grey-elegant-307436/>

DO s

- i. Gently pour water over animal (ENSURE NO WATER ENTERS BLOWHOLE).
- ii. Cover the animal with wet towels (LEAVE THE BLOWHOLE, EYES and DORSAL FIN UNCOVERED).
- iii. Dig trenches under the fins/flippers and fill with water to further help keep the animal cool.
- iv. Erect a tent over the animal if possible.

DON'Ts

- i. Drag/Pull animal by the tail/fluke. This can severely injure the animal's vertebral column.
- ii. Take an animal that strands by itself back into deep water before it has been examined by an appropriately trained veterinary professional. AN ILL ANIMAL CAN DROWN!

4. PROTECT YOURSELF: FROM INJURY

- i. Avoid the mouth and tail/fluke. A stressed animal may bite or deliver a lethal blow with its tail!
- ii. Do not attempt to lift the animal alone or without adequate assistance.
- iii. Be vigilant. Do not accidentally wander into deep water or strong currents while supporting an animal that is in the water.

FROM INFECTION

- i. Do not place your face over the blowhole. Exhaled air may contain droplets harbouring infectious organisms that may be hazardous to human health.
- ii. Avoid touching any cuts, bruises or other lesions on the animal's body.
- iii. Avoid contact with bodily fluids or discharges (for example from the blowhole, anus, genital tract). These may contain infectious organisms that may be hazardous to human health.
- iv. Wash hands thoroughly with soap and water and use hand sanitizer containing 70% ethyl alcohol.

Following these guidelines not only gives stranded marine mammals the best chance at survival when returned to the ocean, but also safeguards the health of the public by protecting against injury and against contracting diseases that these animals may potentially be harbouring.

More information on Marine Mammal Strandings in T&T may be found on the TTMMSN Facebook page.

Dr. C. Phillips Savage is a Certified Aquatic Veterinarian, a Lecturer in Marine Mammal Medicine and Aquatic Animal Health at The UWI, School of Veterinary Medicine and Coordinator of the Trinidad and Tobago Marine Mammal Stranding Network.

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Contributors:

Ruqayyah Thompson
Institute of Marine Affairs

Rahanna Juman PhD
Vice Chair - ICZM Interministerial Committee/
Director (Ag.) Institute of Marine Affairs

Judy-Ann Bennett
Project Coordination Support, REBYC - II LAC Project, Fisheries Division;

Lara Ferreira
Fisheries Officer, Fisheries Division

Shantel Charles
Institute of Marine Affairs

Carla Phillips Savage, DVM (Hons.), MPhil, PhD, PgC, CertAqV.
UWI, School of Veterinary Medicine/
Coordinator of the Trinidad and Tobago Marine Mammal Stranding Network

Prepared by:
Institute of Marine Affairs

Photo by Sebastian Voortman from Pexels