INSTITUTE OF MARINE AFFAIRS

IMA NEWS

SEPTEMBER 2013 | **VOLUME 3 - ISSUE 3**

*From l-r, Dr. Donna – May Sakura – Lemessy, Professor Indar Ramnarine, Dr. Amoy Lum Kong, *Mr. Gerard Mahabir, *Ms.Tracy Medina, *Ms. Maria Wyke, Senator the Honourable Minister Ganga Singh, *Dr. Darryl Banjoo, *Mr. Jonathan Gomez, *Mr. Addison Titus , P.S. Vidiah Ramkhelawan*

**IMA's long service awardees*

IMA celebrates 35 years of operation

The IMA celebrated its 35th Anniversary at the Capital Plaza hotel on Friday 27 September 2013 with a gala dinner, long service awards and entertainment. The entertainment was provided by the Amritam Shiv Shakti dancers and by Xavier Strings. Minister Singh in his feature address said, "Over the years the IMA has increased in strength as it gradually developed the capability and experience to fulfil its mandate. The data and information collected have assisted the Government of Trinidad and Tobago in its formulation of policies and preparation of plans at the national level."

INSIDE THIS ISSUE

- IMA Board and Staff 2
- Invasive Alien Species Workshop 3
- ICZM 3
- Heavy Metal Distribution in Trinidad and Tobago 4-5
- IMA's 13th Research Symposium 6
- IMA Events and Activities 6-7
- The Blue Corner: Stars in the ocean 8

BOARD MEMBER PROFILE

Sunita Ramgoolam

Ms. Ramgoolam is the Principal at Ramgoolam & Associates – Chartered Accountants. She is a dedicated Chartered Accountant with over 18 years of experience in Accounts, Taxation & Auditing. Ms. Ramgoolam has developed and implemented financial systems, strategies, processes and controls that significantly improve Profit and Loss scenarios. As a Governor of the IMA Board, she works closely with Board of Governors and staff to ensure proper auditing procedures are developed and followed. Ms. Ramgoolam holds the Association of Chartered Certified Accountants qualification. Her professional qualifications include, a Certified Accountant (Member in Practice) with the Institute of Chartered Accountants of Trinidad and Tobago.

WELCOME TO THE IMA

Zaheer Khan joined the IMA as the Health and Safety Officer on October 1 2013. He is responsible for coordinating health and safety systems at the IMA. In addition he will also identify hazards, assess risks to health and safety, put appropriate safety controls in place and provide advice on accident prevention and occupational health to management and employees. Mr. Khan has over 7 years experience in the field of occupational health and safety, five of which he spent in the manufacturing sector and two years in services and research. He has a Level 6 Nebosh diploma and a Msc. in Occupational Environmental Safety and Health from the University of the West Indies.

Zaheer Khan
Health and Safety Officer

NEW STAFF

Mrs. Kavita Fulchan began working at the IMA in July 2013 as the Project Manager. She holds a B.Sc. in Civil Engineering and a M.Sc. in Construction Engineering and Management from the University of the West Indies and is PMP certified. With her Engineering and Management education and experience, Mrs. Fulchan plans to focus her attention on the Project Management aspects of the Institute.

Kavita Fulchan
Project Manager

IMA hosts National Marine Invasive Alien Species Workshop

The IMA along with GEF/UNEP and CABI Caribbean and Central America hosted a workshop on Marine Invasive Alien Species, under the project "Mitigating the Threat of Invasive Alien Species in the Insular Caribbean" (MITIASIC). Rosemarie Kishore Senior Research Officer of the Fisheries and Aquaculture Programme is the lead researcher on to the MITIASIC project. The Workshop was held at Capital Plaza, Port of Spain on July 30 2013. Invasive Alien Species (IAS) is a critical issue in the Caribbean Region. IAS arrive in a country as plants, animals and microbes that have been introduced from other parts of the world, and are capable of displacing indigenous species.

Presenters for Identifying Issues and Management of Marine IAS: (l-r) Ms. Rosemarie Kishore, Ms. Lori Lee Lum, Mr. Jahson Alemu I and Ms. Chevalia Chase, UWI.

Marine IAS has been identified as one of the four greatest threats to the world's oceans and to biodiversity globally; and threatens marine industries, trade, fishing, tourism and human health. Based on the complexity of the IAS issue, a regional response, the MITIASIC project was developed. It involves 11 international, 7 regional and more than 25 national partners from five island nations in the insular Caribbean, namely the Bahamas, Jamaica, the Dominican Republic, St Lucia and Trinidad and Tobago. The Project aims to broaden the approach to managing invasive alien species by both strengthening existing national capacity and fostering regional cooperation frameworks through which Caribbean-wide strategies can be developed.

Integrated Coastal Zone Management

Dr. Rahanna Juman—PRO, Biodiversity and Ecology, speaks to participants at the Diego Martin ICZM Public Consultation

ICZM is a continuous and dynamic process that unites government and the community, science and management, sectoral and public interest in preparing and implementing an integrated plan to achieve a balance between economic development and conservation of coastal resources.

On June 21 2013, the ICZM team along with the Chairman of the Mayaro –Rio Claro Regional Corporation Hazarie Ramdeen and Councillors met in Manzanilla and proceeded on tour along the coast to look at sites that were eroding. Coastal erosion was apparent in Manzanilla and in Guayaguayare. The team visited the new fish landing site in Guayaguayare, which could not be utilized by the fisherfolks, and the Port being constructed at Point Galeota.

The Chairman of the Corporation stated that Mayaro/ Rio Claro area did not have much unemployment but there were challenges with coastal erosion and coastal flooding from storm surges. The first ICZM Pre Policy Consultation for Chaguaramas/Carenage /Diego Martin and Cocorite was held on July 4, 2013 at the Central Diego Martin Community Centre. The meeting was attended by fisherfolks, members from community and environmental groups, residents, UTT, Forestry, Fisheries and the Yachting Association. Since then, consultations have been held in Siparia, Moruga, San Fernando, Cedros, Toco, Grande Riviere and Tobago.

Heavy Metal Distribution in Coastal Sediments from Trinidad and Tobago

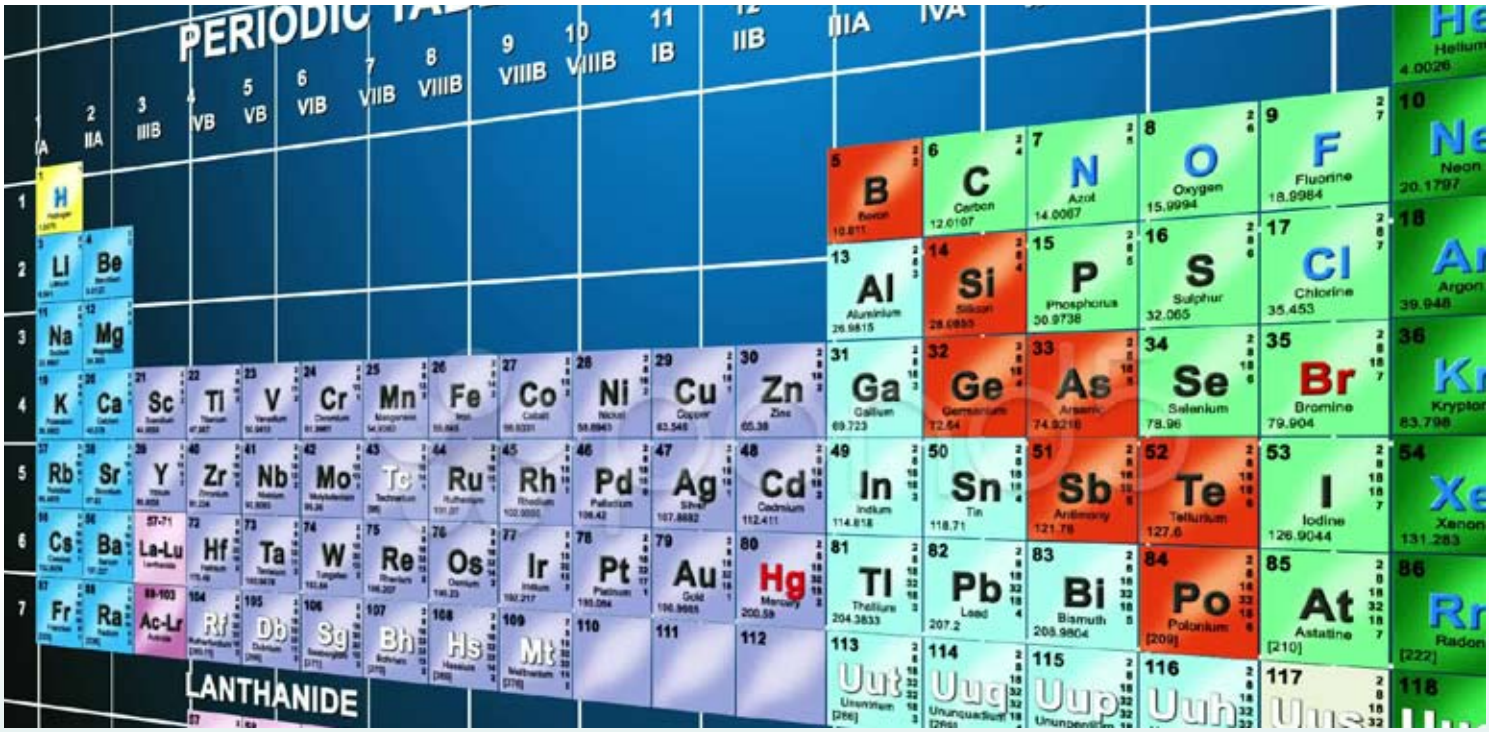


Photo:http://www.pond5.com/

Heavy metals are often defined as elements with densities greater than 5g/cm^3. Although they occur naturally, anthropogenic activity increases the bioavailable concentrations in the environment. Major sources of heavy metals include industrial effluent, sewage and domestic waste, agricultural and urban run-off. While some of these elements are essential elements, all can have toxic effects in organisms when present in excess. Heavy metals present in the environment can biomagnify up the food chain, and consumption of contaminated organisms can pose a risk to human health. Depending on the metal, there can be neurological, systemic, carcinogenic effects, or birth defects.

During the wet season of 2011, coastal sediments were assessed for heavy metal contamination. Thirty-five sampling stations were selected: twenty-five in Trinidad and ten in Tobago. Surficial sediment samples were collected at each station using a Ponar grab sampler and composite samples were prepared using a minimum of two grabs per station. Samples were transported back to the laboratory on ice where they were stored frozen until analysis. Samples were analyzed for total organic carbon, and total recoverable vanadium, chromium, manganese, iron, cobalt, nickel, arsenic, selenium, cadmium, barium and lead. Total organic carbon is the carbon found in organic matter; it can be due to natural sources (i.e. decomposition of plant and animal matter) or anthropogenic sources such as sewage. Total recoverable metal is the metal fraction that can become available under normal environmental conditions. Samples for analysis of heavy metals were prepared using microwave assisted acid digestion. In this technique, samples are heated up with concentrated nitric acid in order to extract the metals from the sediment into the acid. Samples were analyzed using Inductively Coupled Plasma/ Mass Spectrometry.

Statistical analysis of the data showed that elevated metal concentrations were recorded primarily in sediments from the Gulf of Paria off the west coast of Trinidad. This is likely to be due to a combination of factors. Firstly, the west coast of Trinidad is highly industrialized and urbanized, and hence several land-based sources of metal pollution are present. Secondly, sediments in the Gulf of Paria tend to have smaller grain size and higher organic matter content, which facilitates stronger adherence of greater quantities of metals to the sediments. Finally, the Gulf of Paria is semi-enclosed and more sheltered, which results in less flushing compared with other coastal areas. One station off the west coast- the station near to Cedros at which there is limited anthropogenic activity- was among the least polluted sediments in the study. The least polluted sediments were recorded primarily in Tobago, although some hotspots existed there.

Stations with elevated metal concentrations were in close proximity to anthropogenic activities in some instances. For example, the most elevated lead concentration was recorded close to Chaguaramas where there is considerable marine activity such as sand-blasting and painting of vessels; barium concentrations were most elevated in the La Brea/ Point Fortin area where there is oil and gas related activity; the most elevated arsenic concentrations were recorded off Point-a-Pierre and Mayaro, where there is oil and gas related activity; and near the Scarborough Port in

Tobago- metals generally tend to be elevated in harbour sediments. In contrast, elevated concentrations of some metals were recorded at stations further away from intense anthropogenic activity (e.g. most elevated manganese off Maracas and Filette- deepest stations off the north coast, and most elevated cobalt and nickel near Chacachacare- the deepest station off the west coast). This suggests that factors such as circulation patterns and bathymetry are also influencing metal distribution.

The results of the study suggest that land-based sources and activities in Trinidad and Tobago are adversely affecting coastal sediment quality. Although metals in the sediments may be elevated, they may be in a form that is not biologically available to aquatic organisms, and may therefore have no impact on these organisms. The IMA is currently conducting a project which will further assess coastal sediments for the mobile/ bioavailable metal fraction, and which will seek to determine whether metals considered mobile/bioavailable in coastal sediments are accumulating in (bioavailable to) selected commercial fish species. Management strategies using an integrated approach, particularly off the west coast of Trinidad, will, nonetheless, improve coastal sediment quality and reduce the potential for contamination of the food chain.

Presented by:
Wendy Nelson at IMA's 13th Research Symposium

Water & Biodiversity in the Caribbean
Towards Ocean Conservation

IMA staff retrieving and sorting sediment samples

IMA EVENTS & ACTIVITIES

IMA holds its 13th RESEARCH SYMPOSIUM

On September 18 & 19, the IMA hosted its 13th research symposium at the Arthur Lok Jack School of Business. The theme chosen for the Symposium was "Water and Biodiversity in the Caribbean; Towards ocean conservation," which was appropriate given that the world's water plays a very important role in all aspects of our lives, providing food, employment and other benefits. Over two-thirds of the world's population lives within 400 km of the sea, and just over half of the world's population lives in a coastal strip 193 km wide. The symposium continues to share information, which serves to educate/inform our various stakeholders on the research of the IMA. This year's Symposium included oral and poster presentations. The focus of the first day was on "Managing our Biological Environment," Session I dealt with Marine Protected Species, and Session II on Fisheries and Aquaculture. The second day focused on "the Physical Environment" and "Marine Pollution".

From l-r - Deena Ramsaran-Nanton, Adam Jehu, Rameez Persad, Seema Ramkissoon of the IMA

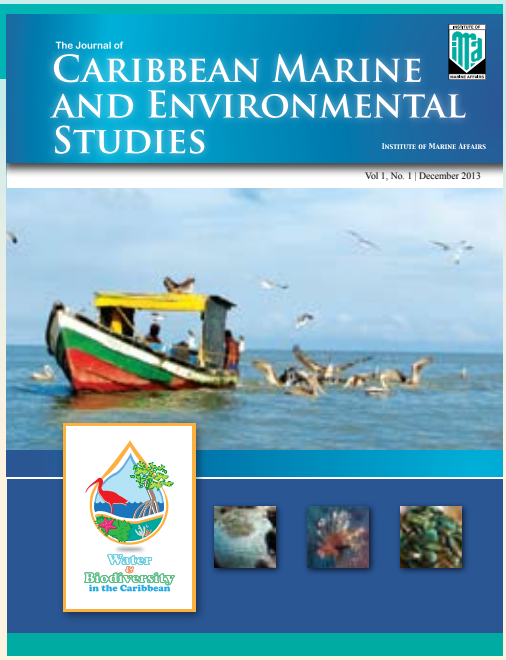
From l-r Krystal Chandler, IMA, and Dr. Lynda Wickham, UWI

Students of Naparima College at IMA's 13th Research Symposium

JOURNAL OF CARIBBEAN MARINE AND ENVIRONMENTAL STUDIES LAUNCHED AT 13th RESEARCH SYMPOSIUM

Professor Andrew Lawrence is Editor in- Chief of IMA's E-journal titled *Journal Caribbean Marine and Environmental Studies* (CMES) to be published in December 2013. The CMES is a broad- based, peer - reviewed journal, publishing original articles dealing with all aspects of marine and environmental studies, specifically within the Caribean region.

Given the unique nature of the region, the journal encompasses a ridge to reef philosophy and, consequently, accepts articles on all ecosystem of relevance: terrestrial, freshwater and marine.



l-r: Professor Andrew Lawrence, Editor-In-Chief, P.S. Vidiah Ramkhelawan of the Ministry of the Environment and Water Resources, and Professor Indar Ramnarine, Chair of the Board of Governors of the Institute of Marine Affairs (IMA) view a poster of the cover of the bi-annual e-journal

Vacation Camp visits IMA

The IMA welcomed a group of students from the NALIS Chaguanas Camp as they visited the Marine Education Center and the Aquaculture facility on July 26 2013. The 25 campers were accompanied by a lead Camp Councilor and taken on a tour of the Aquaculture facility. A presentation was also given by Krystal Chandler, IMA'S Information Officer, which focused on Biodiversity and the threat of the Lionfish. At the end of the tour, the students thanked the staff of Aquaculture and the Information Center for a highly productive day and a wealth of knowledge and awareness of the threat of the Lionfish.

Tyronne Walters, F&ARP and students from NALIS Chaguanas camp.

IMA at "Adopt a River" Programme Launch

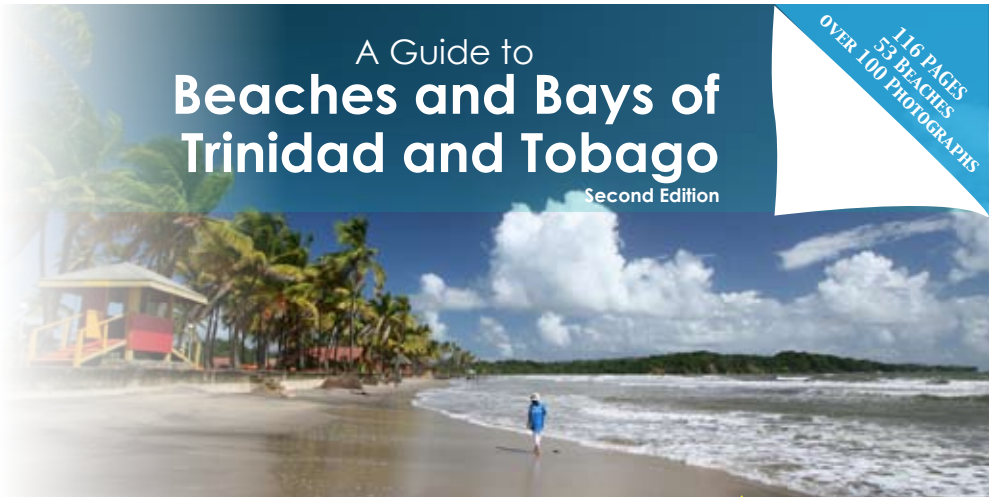
Dr. Donna-May Sakura-Lemessy — Deputy Director of the IMA, attended a Multi-Stakeholder Workshop and "Adopt a River" Programme Launch on Friday July 5, at Lee King Quarry, Valencia. Minister of the Environment and Water Resources, Senator the Honourable Ganga Singh, called for an integrated approach to water resource management, when he formally launched WASA's Adopt a River (AAR) Programme. As a precursor to the launch of the AAR initiative, a two day multi-stakeholder workshop, was held on July 3rd and 4th at the Carlton Savannah, where discussions centered around: pollution sources and control; regulations and encouraging wider community involvement in watershed management. The AAR Programme is a new approach to the protection, preservation, and management of the country's rivers and watersheds to ensure resource sustainability and safeguarding of the environment. The programme aims to achieve its objective by bringing together corporate entities, state institutions, and civil society under one umbrella to work towards reducing many of the challenges negatively impacting the country's watersheds and water resources.

A Guide to Beaches and Bays of Trinidad and Tobago

"... appreciate and learn more about our beautiful beaches and bays... recognize the need for their conservation."

Dr. Amoy Lum Kong
Director
Institute of Marine Affairs

INSTITUTE OF MARINE AFFAIRS
Hilltop Lane,
Chaguaramas,
Trinidad, West Indies
(868) 634 4291



AVAILABLE IN BOOK STORES FROM NOVEMBER 1st 2013

THE BLUE CORNER

"The solution to pollution starts with me"

Starfish or sea stars are echinoderms belonging to the class Asteroidea. The names "starfish" and "sea star" essentially refer to members of this class.

Thorny starfish *(Echinaster sentus)*

• Starfish have bony, calcified skin, which protects them from most predators, and many wear striking colors that camouflage them or scare off potential attackers.

• There are no freshwater sea stars, and only a few live in brackish water.

• Beyond their distinctive shape, sea stars are famous for their ability to regenerate limbs, and in some cases, entire bodies. They accomplish this by housing most or all of their vital organs in their arms. Some require the central body to be intact to regenerate, but a few species can grow an entirely new sea star just from a portion of a severed limb.

References
http://animals.nationalgeographic.com/