



Architects: acla:works · Photo: Brian Lewis

The Research building completed in February 2010 houses the offices of the Environmental Quality, Biodiversity and Ecology, Oceanography and Coastal Processes, and Fisheries and Aquaculture Research Programmes. The associated laboratories include: Remote Sensing, Geology, Microbiology, Heavy Metals, and Fish Age and Growth.

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Dr. Amoy Lum Kong

On 1st October 2011, Dr. Amoy Lum Kong was appointed Director of the Institute of Marine Affairs. She holds BSc and MPhil degrees from The University of the West Indies and a PhD from the University of Aberdeen, United Kingdom.

Dr. Lum Kong first joined the IMA in January 1990 as a Research Officer, and was subsequently promoted to Senior Research Officer and Principal Research Officer of the Fisheries and Aquaculture Research Programme.

In 2001, she was appointed Deputy Director - Research and acted as the Institute's Director between June 2005 and March 2007. Among her achievements at the IMA are:

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Prof. Indar Ramnarine

Indar Ramnarine is Professor of Fisheries and Aquaculture at The University of the West Indies (UWI). He did his BSc degree in Agriculture at UWI, his MSc in Fisheries Management at the University of Wales, his PhD in Zoology, in the field of

Aquaculture at UWI, and his MBA specializing in Human Resource Management (Edinburgh Business School). He has 25 years of research experience in the fields of fisheries and aquaculture.

He has represented the UWI on the Fisheries and Monitoring Advisory Committee of the Ministry of Agriculture, Land and Marine Resources (MALMR), and the National Wetlands Committee. He spearheaded policies

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Dr. Lum Kong cont'd from pg 1

the re-establishment of IMA's scientific journal *Caribbean Marine Studies*, the successful organization of IMA's annual research symposium, improved research performance, and increased collaboration with external organizations. She has published on topics such as ecological modelling, fish kill events, ecosystem assessment, and the status of coral reefs.

Dr. Lum Kong worked at the United Nations Economic Commission for Latin America and the Caribbean as an Economic Affairs Officer during April 2009 to December 2010. She was involved in the projects: 'Review of Economic Impacts of Climate Change in the Caribbean,' 'Disaster Risk Reduction in the Education Sector,' and 'Applicability of Biotechnology to Development in the Caribbean: Opportunities and Risks.'

During her present tenure at the IMA, Dr. Lum Kong aims to work with the staff and Board of Governors towards transforming and repositioning the IMA to realise its vision and mission.

Prof. Ramnarine cont'd from pg 1

for Aquaculture Development and Management of the marine fisheries for the MALMR. He also investigated the fisheries ecology of the Caroni Swamp and developed a proposal for the management of its fisheries resources. He has contributed towards aquaculture development on a voluntary basis in Bangladesh, Thailand, Cambodia, Nepal, Jamaica, Guyana and Suriname.

Professor Ramnarine was appointed Chairman of IMA's Board of Governors in November 2010. His vision for the IMA is to make it the premier marine research institute in the Caribbean. The immediate goals of the Board of Governors are to recruit key research personnel and support staff at the IMA in order to drive the research programmes, completion of the building project, establishment of marine research stations in Trinidad and Tobago, a branch office in Tobago, and launch an online journal entitled *Caribbean Marine and Environmental Studies*.

NEW APPOINTMENTS

Congratulations to Dr. Darryl Banjoo!

Dr. Banjoo was appointed to the post of Principal Research Officer, Environmental Quality Programme with effect from 1 October 2011. Dr. Banjoo served as the Officer-in-Charge of the Marine Chemistry Department (now Environmental Quality Programme) since 2001.

Congratulations and welcome to Dr. Ann Marie Jobity!

Dr. Jobity was appointed to the post of Principal Research Officer, Fisheries and Aquaculture Research Programme with effect from 1 October 2011. A former long-standing member of the IMA's Board of Governors, Dr. Jobity is also the former Director of the Fisheries Division, Ministry of Agriculture, Land and Marine Resources.



WELCOME TO THE IMA!

HAMISH ASMATH	- <i>Research Officer - GIS</i>
GLENDON GLASGOW	- <i>Information Officer</i>
ALANA JUTE	- <i>Fisheries Technician</i>
CRISTAN KOON KOON	- <i>Laboratory Technician</i>
SHANE RAMSAMMY	- <i>Laboratory Technician</i>
CHRISTOPHER SUPERVILLE	- <i>Auto Mechanic</i>

AMAZING RECOVERY FOR TOBAGO'S CORALS

Jahson Alemu I - Research Officer (Ecology)

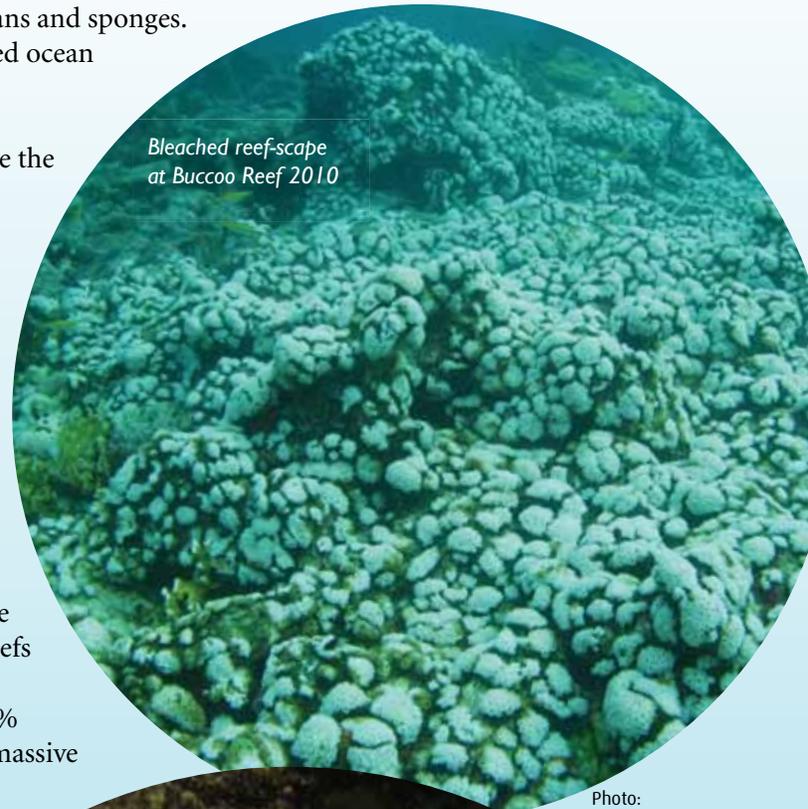
An IMA article in the Trinidad Express, in late 2010 described the onset of a phenomenon that was occurring in Tobago's waters. A mass coral bleaching event was underway with casualties including corals, gorgonians and sponges. There was no doubt that the bleaching was a result of increased ocean temperatures experienced earlier in the year.

In Tobago, the sea surface temperature had climbed well above the bleaching threshold (29°C) for corals in our waters, and was sustained for several weeks. Corals have a symbiotic relationship with microscopic plants called zooxanthellae which live within their cells; the zooxanthellae give corals most of their food as well as their colour. The relationship operates within a narrow temperature range, and a small change in sea temperature triggers the expulsion of the zooxanthellae, resulting in a white appearance of the corals.

Mass bleaching enveloped most of Tobago's corals from August 2010 to March 2011. At the peak of the event (September - October, 2010), sea surface temperatures on reefs were recorded as high as 31°C. Most reefs in Tobago were severely bleached - some more so than others. Of the three reefs observed by the IMA, Speyside's reefs seemed the most badly affected, exhibiting an average of 55% coral bleaching and 25% coral mortality. It was at Speyside that the death of half of a massive brain coral was witnessed.

Some species, such as the Smooth Flower Coral (*Eusmilia fastigiata*), almost immediately succumbed to the warmer waters and died shortly after bleaching. Other species, such as the Starlet corals (*Siderastrea spp.*) and Brain corals (*Diploria spp.*), exhibited some resilience by bleaching but not dying. Species like the Mountainous Star Coral (*Montastraea faveolata*) survived both bleaching and heavy mortality, whereas the Mustard Hill Coral (*Porites astreoides*) and Elliptical Star Coral (*Dichocoenia stokesi*) remarkably, seemed unaffected.

As the adage goes, 'all grey clouds have a silver lining'; the same dead half of the brain coral at Speyside now not only serves as the spawning site of Damselfish; it also provides a home for gobies, blennies and a 'garden' for farmer fish.



Bleached reef-scape at Buccoo Reef 2010

Photo:
Jonathan Gomez



Bleached Smooth Flower Coral at Speyside Reef 2010

Photo:
Jahson Alemu I

Amazing Recovery cont'd from pg 3

Amazingly, a re-assessment of the reefs by the IMA in September 2011 indicated signs of recovery. The usual browns, greens, reds and yellow hues of healthy living corals have returned, with a few dotted portions, reminders of what transpired almost a year ago. Two of the reefs which the IMA monitors - Buccoo and Culloden - have shown remarkable resilience and continue to exhibit the same coral cover and diversity as observed pre-bleaching. Some reefs in the more severely affected Speyside area are recovering much slower, but they nonetheless continue to support a very rich and diverse community of fish and invertebrates, and are expected to fully recover.

The 2010 bleaching event represented the second most severe occurrence of its kind affecting Tobago, with an occurrence in 2005 arguably being the most severe. Episodes of bleaching in 1998 were associated with the highest reported sea surface temperatures at that time. By 2002, 2005 and 2010, however, the 1998 record had progressively been surpassed.

Although mass coral bleaching is a recent phenomenon, if climate change projections hold true, we are headed down a trajectory which may see more frequent and more severe bleaching events in the future.

As a result, the IMA continues to monitor the health of selected coral reefs in Tobago.



*Bleaching of Maze Coral
at Flying Reef, Tobago*

Photo:
Jonathan Gomez



*Recovering Brain and Mustard Hill corals
at Buccoo Reef in September/October 2011*

Photo:
Jahson Alemu I

MINISTER OF HOUSING AND THE ENVIRONMENT VISITS THE IMA



Dr. The Hon. Roodal Moonilal, Minister of Housing and the Environment paid his first official visit to the Institute of Marine Affairs since the organization's assignment to the Ministry. The visit took place on Friday November 04, 2011.

The Hon. Minister met with the Board of Governors and the recently appointed IMA Director, Dr. Amoy Lum Kong. At the meeting, the Hon. Minister discussed, among other matters, possible collaborative projects including environmental awareness programmes at both primary and secondary schools with agencies of the Ministry.

The meeting was followed by a tour of the IMA's Marine Education Centre, Aquaculture facility and the Research Block, during which the Minister met with Heads of Department and staff. The Hon. Minister was accompanied by the Acting Permanent Secretary in the Ministry of Housing and the Environment, Mrs. Joy Creese, Acting Deputy Permanent Secretary (Environment), Mr. Antony Ramnarine and Advisor to the Minister, Dr. Asgar Ali.

Dr. The Hon. Roodal Moonilal, Minister of Housing and the Environment, flanked by the Board of Governors of the Institute of Marine Affairs and Mrs. Joy Creese (front row, extreme left), Acting Permanent Secretary, Ministry of Housing and the Environment and Mr. Antony Ramnarine, Acting Deputy Permanent Secretary, Ministry of Housing and the Environment (back row, extreme left). The IMA's Director, Dr. Amoy Lum Kong is 2nd from left (front row).



Dr. The Hon. Roodal Moonilal, Minister of Housing and the Environment (second from right), Deanesh Ramsewak, Remote Sensing Officer (extreme right), Adam Jehu, Research Officer, Prof. Indar Ramnarine, Chairman of the IMA's Board of Governors (extreme left)

IMA AND UWI SIGN MOU

On Thursday November 24th, the IMA signed a Memorandum of Understanding (MOU) with The University of the West Indies, St. Augustine. The umbrella agreement, which is effective for five years, is similar to a previous one signed in 1992 between the IMA and UWI St. Augustine. It builds on historical linkages between the organizations and is meant to facilitate collaboration in research, training programmes, joint sponsorship of conferences and workshops and joint appointments.

The ceremony was held at the Office of the Principal, UWI St. Augustine, Prof. Clement Sankat. Prof. Sankat signed on behalf of the University. IMA staff Patricia Tobitt, Chief Information Officer; D'Angelo Merritt, Accounts Manager; Sharla Pinder, Executive Assistant; and Oscar Ramoutar, Network Administrator attended this event.



Dr. Amoy Lum Kong, IMA Director, signs the Memorandum of Understanding, assisted by Prof. Indar Ramnarine, Chairman, IMA Board of Governors who is seated next to Prof. Clement Sankat, Principal, UWI St. Augustine

IMA EVENTS & ACTIVITIES

Coastal Care for Hart's Cut

The International Coastal Clean-up (ICC) aims to make waterways as free of pollution as possible, thereby providing pristine habitats for plants and animals. With the information on the collected litter, the initiative seeks to inform policy decisions and encourage behavioural change globally. Hart's Cut was one of the sites for the 2011 ICC in Trinidad, which was held on September 17th. The IMA, Angostura Ltd., the Ministry of Housing and the Environment, and Bishop's Centenary College cleaned up this site.

An ICC volunteer sorts litter collected at Hart's Cut



IMA works with NASA

The IMA met with the US Ambassador and pilots of the National Aeronautics and Space Administration (NASA) on August 24th 2011. The meeting was held to discuss a collaborative multi-agency project to make use of advanced imaging sensors mounted onboard unmanned aerial vehicles (UAVs) to map reefs and sea grasses in Tobago.

Deanesh Ramsewak, Remote Sensing Officer, IMA (second from left), Her Excellency Beatrice Wilkinson Wélters, US Ambassador and NASA Ames Research Center Mission Manager, Dr. Randall Berthold (right) and Chief Pilot Mark Sumich (left)

IMA hosts Aquaculture Workshop

From June 29th to July 1st 2011, the IMA hosted a workshop on Re-circulating Aquaculture Systems. The workshop featured hands-on training in the design, operations and management of re-circulating systems for culturing fish. The 32 participants came from diverse backgrounds, but all had some previous experience in fish farming. In addition to technical information, they received advice on Government incentives for aquaculture and opportunities available for financing. At the end of the workshop, participants were equipped to design their own systems, monitor water quality and assess and manage the health of their fish. Lecturers included Prof Indar Ramnarine, Chairman of the IMA's Board of Governors; Dr. Carla Phillips of UWI School of Veterinarian Medicine; Mr. Eric Roderick, CEO Fishgen Ltd. University of Wales; and Paul Gabbadon, Senior Research Officer of the Fisheries and Aquaculture Programme at IMA.

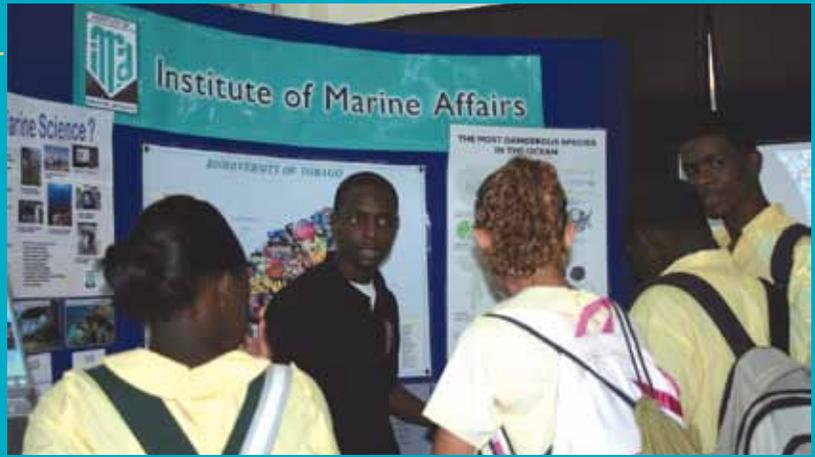
Israeli Team visits IMA

On 30 November 2011, a team of Israeli officials visited IMA's Aquaculture Facility. Ambassador Amiram Magid of the State of Israel to Trinidad and Tobago, the Minister of Agricultural and Science Affairs for the US, Canada and Mexico, Mr. Zvi Herman were accompanied by the Advisor to the Honourable Minister Vasant Bharath and representatives of the Ministry of Food Production, Land and Marine Affairs. The visitors viewed the tilapia hatchery, brood ponds and the Re-circulating Aquaculture System.



IMA at Tobago Science Expo

Tobago continues its drive to popularize science. The Department of Education within the Division of Education, Youth Affairs and Sports of the Tobago House of Assembly hosted its 4th annual Tobago Science Expo from the 26th to 30th September 2011. Education Officer, Lori Lee Lum, and Information Officers Krystal Chandler and Glendon Glasgow represented the IMA at this event. This year's theme was entitled "Science in Entertainment: Adventure, Amusement and Art". Students, teachers and science clubs at all levels were present. Daily attendance at IMA's both was estimated to be 500 - 550 persons.



Glendon Glasgow, Information Officer, explains biodiversity to Goodwood High School students



C. Bullock (second row, far left) and D. Banjoo (third row, third from right) with Workshop participants

Regional Experts Workshop on Environmental Monitoring and Assessment

Dr. Darryl Banjoo and Ms. Christine Bullock of the Environmental Quality Programme participated in a Regional Experts Workshop on 'Environmental Monitoring and Assessment in the Wider Caribbean Region' held from 26th - 30th September in Montego Bay, Jamaica. The workshop was hosted by UNEP's Caribbean Regional Coordinating Unit in fulfilment of a decision of the Contracting Parties of the Cartagena Convention to establish an Interim Working Group. This group will continue the work related to the monitoring and assessment of water quality conditions throughout the Convention Area, as required under the Land-Based Sources and Activities (LBS) Protocol.



Deanesh Ramsewak, Remote Sensing Officer (far left) with participants at the CARIBSAT meeting

IMA attends CARIBSAT Meeting

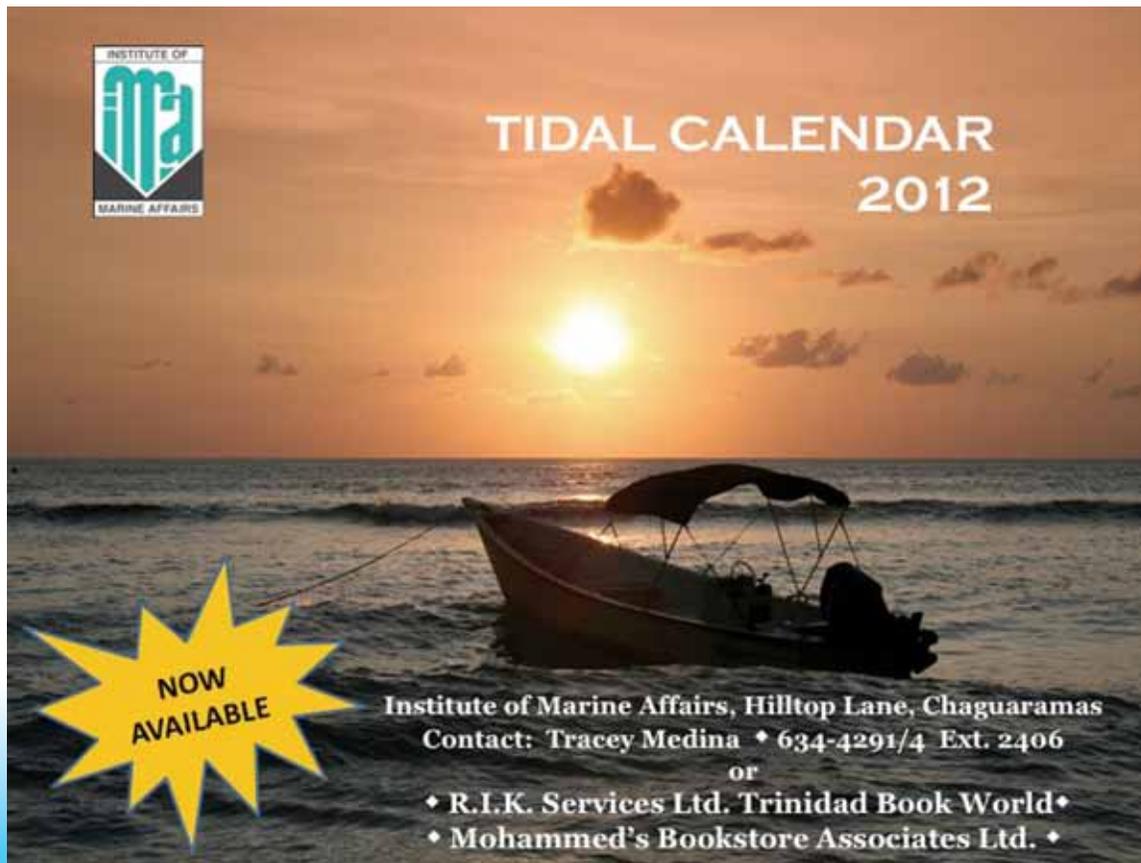
The IMA was represented at a CARIBSAT meeting which was held during 4-7 July in Fort-de-France, Martinique. The meeting brought together scientists from La Réunion, Montpellier, French Guiana and Trinidad and Tobago. The CARIBSAT project aims to develop a tool to monitor the environment in the Lesser Antilles based on data and information supplied by the analysis of satellite images, ground data and hydro-meteorological reports. More specifically, the project targets the preservation of terrestrial and marine biodiversity; the management of the risks posed by natural disasters and the impact of climate change.



Chinese delegation visits IMA

A delegation from the China-Caribbean Economic and Trade Cooperation Forum in Trinidad and Tobago visited the IMA's Aquaculture facilities and the Fisheries Age and Growth laboratory on 14th September. The tour of the Aquaculture facilities was led by Paul Gabbadon, Senior Research Officer, Fisheries and Aquaculture Programme.

Paul Gabbadon, Senior Research Officer of the Fisheries and Aquaculture Programme (fifth from right) explains stocking density



THE BLUE CORNER

"Going green begins with living blue"

Marvellous Manatees

*The Marvellous West Indian
Manatee (Sea Cow)*



- Manatees originated in the mid-Eocene period around 45 to 50 million years ago.
- They can grow up to 4 meters in length and weigh up to 1.59 metric tons
- The average life span is 60-70 years.
- They spend 6-8 hours feeding and 2-4 hours resting.
- Twins are recorded in about 1.8% of births in some populations.
- They are adapted to hear infrasound frequencies below 20 hertz and communicate fear, anger, pain and sexual arousal.
- Manatees may have intestines up to 46 metres long.

*<http://act.oceanconservancy.org>; www.manatees.net ;
www.manateetrust.org ; araneo.info/Trinidad-Tobago*

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