INSTITUTE OF MARINE AFFAIRS

IMA NEWS

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Fig 1. Green-water Tilapia Nursery

What's HAPA-ning in the Aquaculture Facility?

To enhance the economics of Tilapia production at the Institute of Marine Affairs, the Aquaculture Facility has implemented its first green-water nursery, via the use of 30 blue-netted enclosures (or hapas) fitted into Pond 4 *(Fig. 1)*. This would now serve as the primary area for all Tilapia fingerling development under the Jumpstart Project.

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What's HAPA-Ning in the Aquaculture Department?

To run this green-water facility, the concept of which was developed originally in Thailand, Tilapia fry would first be collected from the broodstock pond.

These fry are the products of breeding Tilapia adults kept in a 3 female: 1 supermale ratio - a ratio accepted for its ability to optimize egg production, whilst minimising the possibility of male on male aggression. Due to the use of supermales, (YY) and not normal males (XY), there is a high probability that the resulting fry are monosex (majority male); a characteristic that is globally encouraged to restrict unregulated breeding and improve growth rates in a Tilapia's production cycle. The use of supermales also negates the need for sex-reversal hormones in the process of fry development, making the eventual product acceptable for human consumption.

Fry collected from the broodstock pond would then be bulk weighed *(Fig. 2)*, to determine the appropriate feeding rate to be applied for development to a 5g marketable–sized fingerling. For 30 days, which is an acceptable duration to produce the 5g fingerlings, they are fed only a supplemental portion of a commercial ration. The algae within the pond also provides nutrition throughout this period.

After weighing, the fry are sorted into batches of 1000, and then placed into a designated hapa for 30-day development into fingerlings *(Fig. 3)*. During this stage the following data is collected: daily water quality, weekly growth rates, feed conversion ratios and overall survival of fry to fingerling. This information is then used to create an economic profile for local application of the system. This knowledge is then shared with hatchery farmers and/or potential investors.

Each hapa is fitted with an individual cover to reduce the incidence of aerial predation. A paddlewheel was also introduced to the green-water nursery to provide mechanical aeration for this intensively cultured pond system *(Fig. 4)*.

Fig. 2: Bulk weighing of fry

Fig. 3: Tilapia fry being counted and placed into hapas

Fig. 4: Paddlewheel aeration

Fig. 5: 30-day old Tilapia fingerlings

Use of this hapa-based system as a green-water nursery is expected (i) to facilitate controlled development of Tilapia fry to fingerling stage within a 30-day cycle, (ii) to provide a cost-saving benefit since less feed would have to be purchased for fry to fingerling production, (iii) to create an economic model which local hatchery farmers/investors can follow.

For more information or to request a tour of this system, please contact:
Ms. Rhea King-Julien (Ext. 1111) or
Mr. Addison Titus (Ext. 1277).

Lionfish Derby & Tasting at Castara

A second Lionfish Derby was held in Tobago — this time at Castara on Saturday 4th and Sunday 5th July 2015. Over $25,000.00 in cash prizes and trophies were won by participants in the categories of SCUBA, Non-SCUBA and Under 18 years. There were 7 SCUBA teams, 21 Non-SCUBA teams and 1 Under-18 participant. Over 280 Lionfish were caught with the largest measuring 40.4 cm and the smallest measuring 10.0 cm. The day's catch was used to prepare various dishes by four restaurants in Castara. The attendees at Sunday's Prize Giving event were invited to sample curried, stewed, grilled and fried Lionfish.

Although Lionfish are widely dispersed throughout the western Atlantic Ocean and Caribbean Sea, there is misinformation regarding the biology and ecology of this invasive species. Lionfish derbies serve to educate participants and the public, and seek to raise awareness of the problem. Research indicates that single day removal events can be highly effective in lowering the local Lionfish population.

This year, media coverage of the event was done by "Bad Granny Gets Wet". This documentary TV series is based around the passion and love that five young multi-talented boys from Trinidad and Tobago share for their country and the marine environment. The 30-minute video production will be aired in 2016.

See more photos of the Derby on Page 4.

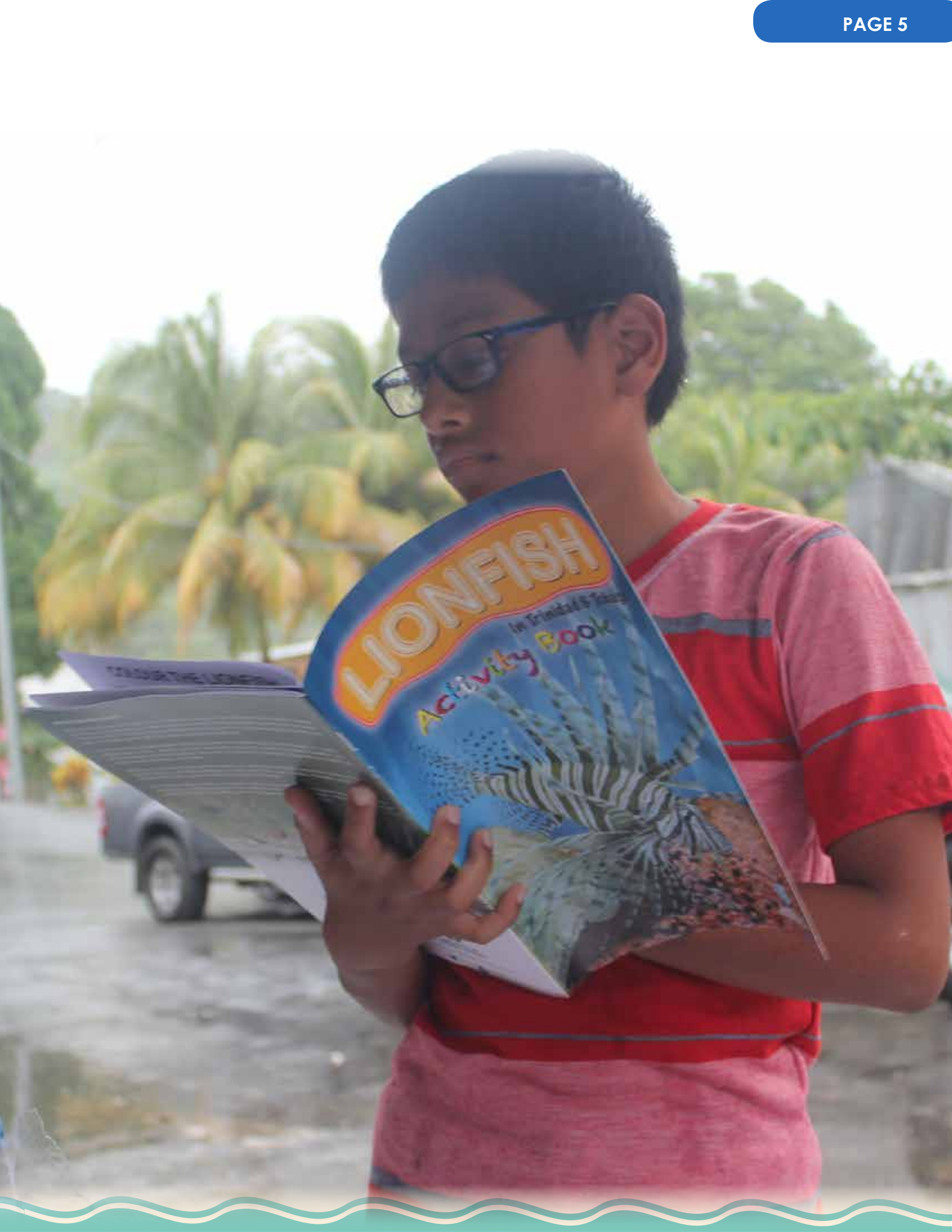
Prize-giving ceremony

What a catch!

Learning to fillet

A delicious Lionfish dish

UNDER


LIONFISH
Activity Book

IMA EVENTS, ACTIVITIES and OUTREACH

Submarine Turbine

IMA is currently conducting a feasibility study on the use of Submarine Turbines, to determine if this method for generating green energy is economical, efficient and practical. For the study, currents were measured at the Serpent's Mouth, Dragon's Mouth, Galleons Passage and off Little Tobago and analysed for current speeds, hydrokinetic power and constancy.

These measurements were obtained using a vessel mounted **RTK** (Real Time Kinematic GPS) aided Nortek AWAC in a downward looking configuration, logging data continuously for approximately six hours at each site.

To determine site suitability, data such as seabed depth, navigation channels/approaches, and sensitive ecosystems, was analysed and compared. Preliminary results indicate that the currents around Trinidad and Tobago are not of the magnitude (>1ms-1) and constancy required to efficiently and economically generate electrical power.

This study is ongoing with long-term current meter deployments envisioned for the future. These will be useful to better assess and determine the feasibility of generating electrical power using a current driven, submarine turbine in a micro-tidal and seasonal oceanographic environment.

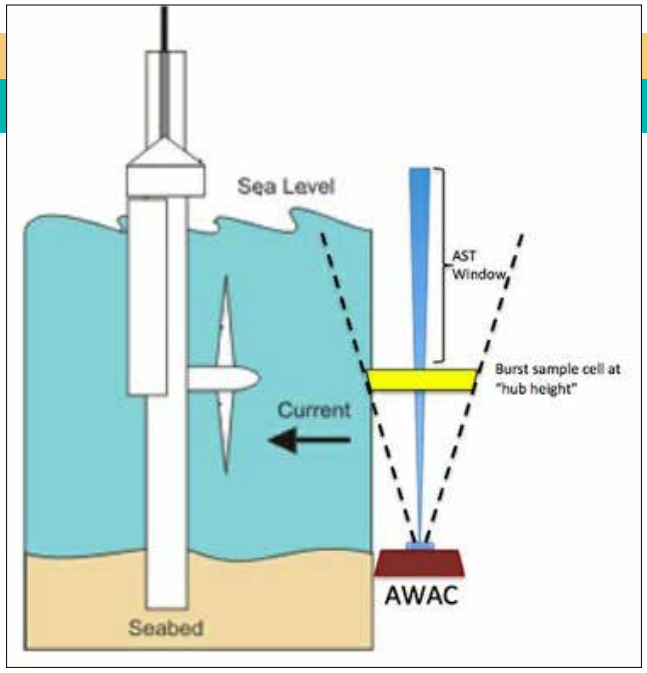


Illustration of the Nortek Acoustic Waves and Currents (AWAC) sensor, in use

Sargassum Lecture

The IMA partnered with the Seafood Industry Development Company (SIDC) and the Public Health Department to deliver a presentation, 'Sargassum seaweed—Background and safety considerations', during a Fisher folk programme meeting with fishermen and fish vendors at the Toco Regional Complex on Tuesday 21st July 2015.

Sargassum presentation by Lori Lee Lum

IMA at Trincity Mall

On Tursday 6th August 2015, IMA participated in UTT's 2nd Marine Sciences Showcase at Trincity Mall. IMA's booth shared information on Lionfish awareness as well as climate change and marine conservation. A live Lionfish was also on display. An estimated 165 students and adults visited the booth. Other marine animals featured at UTT's display included moray eels, urchins, starfish, a seahorse, corals, butterflyfish and scorpionfish.

Krystal Chandler-Ganaselal, Information Officer, raising Lionfish awareness

GIS Expo

The IMA participated in the Ministry of Land and Marine Resources' GIS Expo at Radisson Hotel on Wednesday 5th August 2015.

The exhibit showcased the various projects in which the IMA is currently involved, utilising Geographic Information Systems (GIS) capability and technology. Information was also shared about invasive Lionfish. Approximately 50 persons visited the IMA's booth.

Hamish Asmath, GIS Officer (r), discussing GIS projects with a representative from the Diego Martin Regional Corporation

Lionfish Outreach at Zoo

On Wednesday 26th and Thursday 27th August 2015, the IMA hosted its second exhibit at the Emperor Valley Zoo to raise awareness about the Lionfish in Trinidad and Tobago—the first was held in April 2015 over the Easter vacation. Lionfish are native to the Indo -Pacific region. A live specimen was on display and persons were educated about this invasive species.

Lionfish are voracious predators that eat native fish and crustaceans in large quantities, including both ecologically and economically important species like grunts, snapper, grouper, and cleaner shrimp. They are not known to have any natural predators in the Caribbean Sea and are equipped with venomous spines, which can cause painful wounds to humans. Over 400 children and adults visited the exhibit.

Visitors were able to see and learn about the invasive Lionfish

Environmental Exhibition

The IMA participated in Nature Seekers first Environmental Exhibition entitled 'Promoting Sustainable Practices through Environmental Education' on Sunday 26th July 2015 at Salybia Beach. Approximately 270 adults and children visited the IMA booth to learn more about marine conservation and the Invasive Lionfish.

Christopher Alexis, Research Officer, sharing information on climate change.

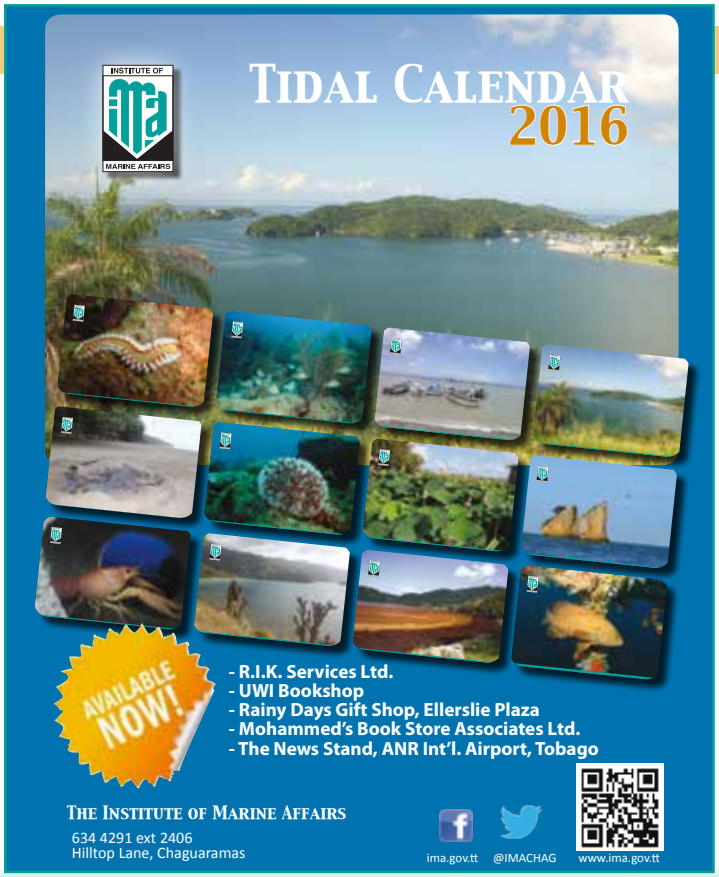
IMA at WASA/WRA Symposium

The IMA participated in the Integrated Water Resources Management (IWRM) Research Symposium held at the University Inn Conference Room at UWI on 15th and 16th July 2015.

Two presentations were delivered at the symposium, **'Development and Hydrological Changes to a Coastal Wetland in South West Trinidad'** by Dr. Rahanna Juman, Principal Rearch Officer, Biodiversity and Ecology Research Programme, and Mr. Hamish Asmath, GIS Officer, and **'A focus on the Environmental Quality in the Gulf of Paria'**, by Dr. Darryl Banjoo, Principal Research Officer, Environmental Quality Programme.

Dr. The Hon. Ganga Singh, Minister of the Environment and Water Resources, visits the IMA's booth at the WASA/WRA Symposium

An IMA Booth was set up on the first day, through the IC Department and approximately 40 persons visited. The IMA has been a part of the IWRM Forum since 2009. This IWRM Research Symposium is important to the IMA because it addresses the linkages between systems and policies. Trinidad and Tobago is a Small Island Developing State where activities and people are in close proximity to the coast therefore there is an association between IWRM and national Integrated Coastal Zone Management (ICZM).



TIDAL CALENDAR 2016

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THE BLUE CORNER

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

Discus Fish

Discus fry on adult fish
http://up.parsipet.ir/

The Discus fish is a type of cichlids native to the Amazon River basin.

Due to their distinctive shape and bright colours, Discus fish are popular as freshwater aquarium fish, and their aquaculture in several countries. Another characteristic of this species is their care for the larvae. The adult Discus fish produces a mucus secretion through their skin, which the larvae live off of during their first few days.

Reference
http://www.fishlore.com/Profiles-Discus.htm

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