INSTITUTE OF MARINE AFFAIRS

IMA NEWS

APRIL 2016 | VOLUME 6 - ISSUE 1

Photo: Sarah Sekula http://www.tourismbonaire.com

Grilled Lionfish with Sweet Chilli Sauce, from Bonaire

Photo: http://lionfish.co

Lionfish Dragon Sushi Roll, from Aruba

Photo: Glendon Glasgow

Fried Lionfish with Breadfruit and Paratha roti, from Tobago

Lionfish on the Menu – a new taste in town

Ever wondered what Lionfish tastes like? The trending culinary buzz about this new fish in the region is that it has a white, flaky delicious meat similar to snapper – a quality preferred by high-end chefs from the Caribbean to Latin America. The exciting news is that the Lionfish market might now be on the cusp of entering the seafood mainstream appearing on menus as a sustainable option alongside salmon, shrimp, and the occasional mahi mahi.

(continued page 2)

INSIDE THIS ISSUE

- Lionfish on the Menu - a new taste in town 1-3
- The Secret Lives of Polychaete Worms 4-5
- IMA Events and Activities 6-7
- The Blue Corner - Seahorses 8

Lionfish on the Menu - a new taste in town (con't.)

The groundswell of consuming Lionfish has followed its rapid spread throughout the coral reefs of the Caribbean, where they prey on and compete with other species, decimating native reef fish populations and negatively impacting coral reef ecosystems. Lionfish pose a direct threat to local fishing and tourism sectors. While eradication of Lionfish may not be possible, resource managers have found that derbies and organized diver removals are proving highly effective at controlling local Lionfish populations.

Derbies are competitions in which teams of SCUBA and free-divers hunt the fish using pole spears, a type of modified spear gun. They begin at sunrise and are required to bring their catch to the weigh station by a specified time on each day where the fish are measured. Prizes are awarded for teams catching the Most, Largest, and Smallest Lionfish. Of course, bragging rights go along with the prizes! As many as 1,000 or more of these fish can be removed in single or two-day events, which also serve to train people to remove Lionfish, encourage development of markets and through its 'tastings', help to change attitudes toward eating the spiky predator. Additionally, regular culling exercises on a local scale have been shown to keep Lionfish numbers down. In Curacao, these weekly activities from September 2012 to January 2016 have removed 39,669 Lionfish, that's more than 200 fish a week!

With all that Lionfish available and more waiting to be hunted, new industries have evolved to take advantage of the bounty. Lionfish hunting equipment, dive packages to hunt and eat the catch, and new additions to menus have been added. For the health conscious, the fish has higher concentrations of omega-3 (heart healthy fatty acids), and is lower in saturated fats and heavy metals such as mercury, than grouper, snapper, tuna or mahi mahi. They are being marketed as a sustainable eco-friendly food option with the added appeal that eating Lionfish is beneficial to reefs and marine ecosystems. Besides its pleasant taste and texture there is no risk of the residual antibiotics, hormones or dyes associated with farmed fish. At present, sixteen countries in the Caribbean and five in Latin America are serving up Lionfish in tacos, sushi, ceviche, and creating their own signature dishes. The fish is being exported from Jamaica and the Bahamas and is served as a gourmet item in Florida and New York.

In 2012, Trinidad and Tobago officially became the last Caribbean country to be invaded by the Lionfish. At derbies held in Charlotteville and Castara, organized by the Institute of Marine Affairs (IMA) during 2014 and 2015, participants feasted on grilled, curried, coconut stewed, and herb-basted Lionfish, proving that the versatile meat can be adapted to our local dishes. For seafood safety standards, the IMA sent Lionfish samples to be tested for ciguatera toxin – that nasty seafood-borne illness caused by certain types of plankton – all the samples tested met United States Food and Drug Administration standard for safe human consumption.

Trinidad and Tobago is now poised to join the culinary foray into this exotic fish with a buttery taste. As foodies, we have readily embraced gourmet pizzas, wine bars, vegan foods, and sushi. Asking for Lionfish would encourage local chefs to put this sustainable seafood option on their menus. It is now time to invite Lionfish on to our plates.

Lori Lee Lum, Community Education Officer, Information Centre

Coconut-crusted Lionfish fillet with Mango Salsa, from Jamaica

Photo: http://jamaica-gleaner.com

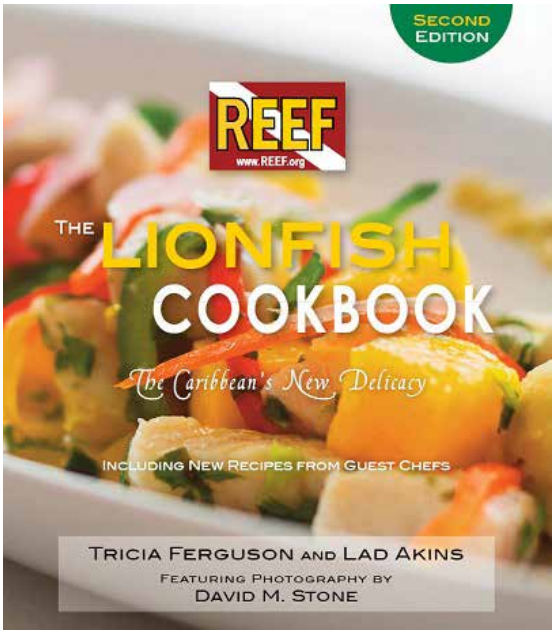
Lionfish Cerviche, from Cayman Islands

Photo: Chris Court http://www.flavacayman.com

Caribbean islands and number of restaurants serving Lionfish dishes, when available

Anguilla, BWI	2	Curacao	6
Antigua & Barbuda	1	Dominica	4
Aruba	3	Dominican Republic	1
Bahamas	3	Grenada	1
Barbados	7	Jamaica	2
Bonaire	8	Puerto Rico	3
Carriacou	2	St. Kitts and Nevis	2
Cayman Islands	10	Tobago	2

Sources: www.reef.org and http://lionfish.co



The Lionfish Cookbook, Second Edition available from www.reef.org

Coconut-crusted Lionfish fillet with Mango salsa by Chef Jacqui Tyson, Jamaica
(http://jamaica-gleaner.com)

1 cup peeled and chopped firm ripe mango (Julie or Bombay)
1 small onion diced finely
1/2 tsp minced Scotch bonnet (no seeds please)
1 tsp fresh grated ginger
2 tbs fresh cilantro
1/4 tsp salt and pepper
1/2 cup milk or 1/4 cup heavy cooking cream
1 cup sweetened coconut flakes
1/2 cup panko breadcrumbs
4 tbs flour
2 eggs
8 Lionfish fillets

Method

1. In a stainless steel bowl, combine the first five ingredients, toss and set aside. This can be done three hours in advance.
2. In another bowl, combine coconut and panko breadcrumbs.
3. Put flour on a large plate.
4. In another bowl, beat eggs and add milk and set aside.
5. Season fish fillets with salt and pepper then dredge fillet in flour. Shake.
6. Dip each floured fillet in egg-and-milk mix, then coat in coconut.
7. Heat oil in frying pan until pan sizzles.
8. Place fillets in hot frying pan. Cook for two minutes per side until golden brown.
9. Remove on to a baking sheet. Place in oven and bake for 8 minutes.

Serve with salsa over fish, garnish with a sprig of cilantro. BON APPETIT!

The Secret Lives of Polychaete Worms

Photo: http://www.annelida.net/nz/Polychaeta/Family/Dorvilleidae/dorvillea-australiensis-Pic.htm

Dorvillea australiensis head and tail, head, ventral head with jaws

Beaches usually conjure up images of blue skies and white sands, happy children frolicking in the surf under the watchful gaze of their parents lounging on beach chairs and sipping on beverages. Or if you are from Trinidad, say the word "beach" and the next phrase usually out of your mouth is "Bake and shark!" But there is much more to the beach than your favourite beach food staple. Below the sand when you step into the surf is an entire world of mysterious, beautiful, sometimes scary organisms that are essential to the health of our nation's beaches.

These elusive organisms are worms, polychaete worms to be exact. With some coaxing, polychaete worms can be convinced to give up their secrets, albeit begrudgingly. The members of the most dominant benthic marine fauna might even show you their striking colours of red, pink or green, which may be reminiscent of a frontline costume on Carnival Tuesday. Around 10,000 different species of polychaete worms have been described worldwide, the majority of them are less than 10 cm long and between 2 mm to 10 mm wide.

Vital to the marine food chain

If you've ever dug for worms at the beach to use as bait when fishing, chances are you have interacted with polychaetes. This lends to the economic importance of these organisms. Both the adult and larvae of the family Nereididae have been reported to be food for many economically important fishes; the same family of worms you may have stuck on the end of your hook in order to catch your own fish. Polychaetes are the main food supply for a number of commercial species of fish and their continued existence is essential for the maintenance of fishing grounds. Therefore, in order to conserve these species, it is important to know of their biology, ecology and distribution.

Polychaetes are ubiquitous in their distribution ranging from estuaries and inshore waters, like the Caroni Swamp, to the open sea, like the Atlantic Ocean, and even in hypersaline (salinity > 35ppt) waters. Their preference for sediment also varies from sandy to muddy beaches. Some of them enjoy playing in the clean water, while others are at home even when things get dirty. Polychaetes are capable of flourishing in a wide range of marine environments, but their value is much greater for environmental purposes.

Useful Environmental Indicators

Polychaetes are very useful organisms for monitoring the quality of the marine environment. They are abundant, easily identifiable, easy to maintain and easy to sample. They respond quickly to changes in environmental conditions as their mobility is limited and their sensitivity to pollutants results in changes in their reproduction, growth and mortality. The ability to monitor different phases in the recovery of disturbed sites is possible because a different species of polychaetes appear after the cessation of the impact. Polychaetes are therefore helpful in bio-monitoring exercises as indicators for pollutants and other toxic materials usually associated with man-made changes, and are used for this purpose in the USA, UK, Canada, Germany and right here in Trinidad and Tobago.

Spionid sp.

The presence and absence of specific polychaetes in sediments provide an indicator of the condition and health of the benthic environment as they are the dominant macro-fauna within the fine sediments. The families Nereididae and Dorvilleidae are suitable for the assessment of toxicity levels in marine sediments. Their abundance, short life cycles and existence across a wide range of areas lend to their suitability. They serve as good indicators for the presence of Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs) and metal organic complexes. All of these compounds can have environmental negative impacts depending on their concentrations in the environment. Large numbers of organisms from the families Capitellidae and Spionidae, found to the exclusion of others, have been accepted widely as pollution indicators. Species of Nereididae and Nephtyidae are accepted as indicators of early environmental recovery after pollution events have subsided.

So the next time you step into the water of your favourite beach, keep in mind that just below your feet is an entire universe of organisms capable of telling you much about the state of the marine environment. All you have to do is ask the right questions!

Attish Kanhai, Research Officer
Biodiversity and Ecology Research Programme

Glycera sp.

Benthic sampling – pouring the collected sample from the Benthic corer into the Sieve bucket.

IMA EVENTS, ACTIVITIES and OUTREACH

Outreach in Tobago

Seven Secondary Schools were visited over the period 19th - 21st January 2016. Among them were Bishops High School, Scarborough Secondary, Goodwood Secondary, Speyside High School and Signal Hill Secondary Comprehensive School. Lori Lee Lum and Glendon Glasgow, Information Officers, spoke to 187 students from Forms 4 to 6 Environmental Science/Biology/Geography and Integrated Science classes. The topic 'Invasive Species' was presented in light of the Lionfish and Sargassum seaweed invasions that affected the island in the recent past.

Form 5 Geography and Biology students from Harmon School of Seventh Day Adventists learn about Invasive Species

St. Anthony's College celebrates Earth Day

Krystal Ganaselal, Information Officer, and a student discuss environmental threats.

On Friday 4th March 2016, St. Anthony's College hosted an Earth Day exhibition. A student summarized Earth Day as important because "it reminds people to think about humanity's values, the threats the planet faces and ways to help protect the environment." The IMA had a booth and shared information about marine conservation and the invasive Lionfish. Approximately 70 students and teachers visited the display.

Visitors learn about the invasive Lionfish

Lionfish at the Zoo

The IMA hosted an exhibit at the Emperor Valley Zoo to raise awareness about the invasive Lionfish on Friday 1st April and Wednesday 6th April 2016. This is the second year that our Lionfish display has been brought to the Zoo. A live specimen was on show as patrons learned more about this marine pest. Feeding sessions allowed visitors to witness the voracious appetite of the Lionfish. Approximately 350 persons visited the display.

Pigeon Point, Tobago, a low-lying area vulnerable to climate change

GoLo CarSce workshop

Mr. Hamish Asmath, GIS Officer, attended a workshop entitled the "Global Local Caribbean Socio-economic Climate Change Scenarios" (GoLo CarSce) workshop held at the University of the West Indies, St Augustine from 11th - 12th April 2016.

GoLo CarSce aims to help Small Island Developing States in the Caribbean better understand and manage the effects of climate change. The project will improve the scientific understanding of the effects of climate change upon the ecological, socio-political and economic systems of Caribbean SIDS through the development of a set of locally-relevant, socio-economic scenarios for the Caribbean.

IMA participates in CANARI's Climate Change Workshop

Shared use of the coastal zone, San Fernando wharf

Dr. Rahanna Juman, Deputy Director (Ag.) was invited to sit on a panel at CANARI's Climate Workshop on Thursday 28th April 2016, to discuss climate-change adaptation: research and implementation action. Dr. Juman presented on the draft Integrated Coastal Zone Management Policy Framework which treats with climate change adaptation, and is informed by studies funded through the Inter-American Development Bank (IDB) Technical Cooperation.

The "Climate ACTT: Action by Civil society in Trinidad and Tobago to build resilience to climate change" project aims to strengthen the capacity of five civil society organisations (CSOs) in Trinidad and Tobago to internationally accepted levels of best practice in two areas: (i) institutional strengthening and (ii) technical capacity, to deliver programmes/projects related to climate change adaptation and resilience. CANARI is implementing and managing this project in collaboration with Conservation International (CI) and BHP Billiton Trinidad and Tobago.

Career Fairs at Secondary Schools

Coral Reef survey, Tobago

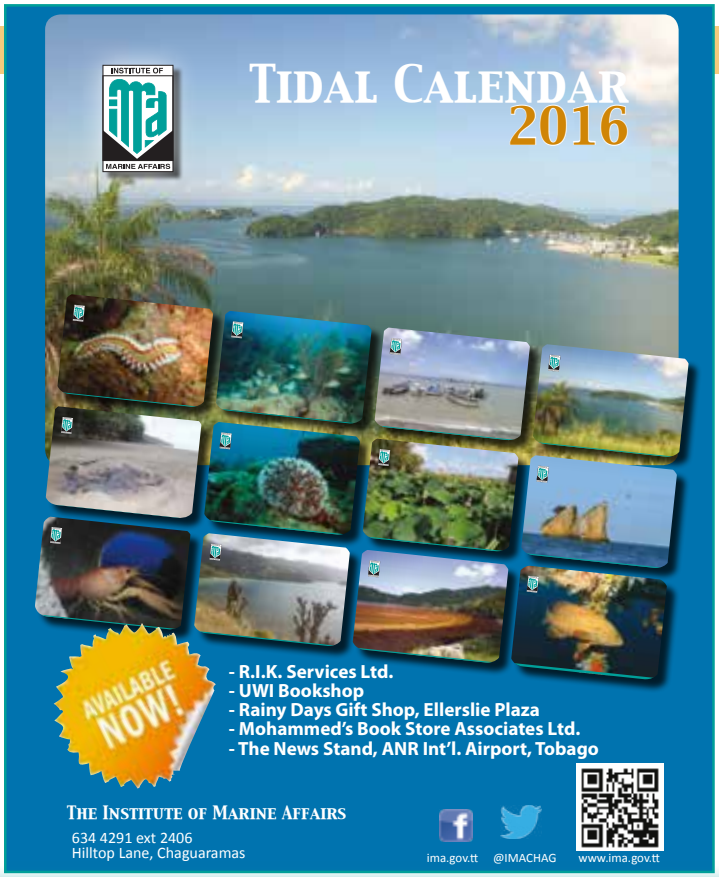
IMA participated in Career Fairs at Belmont Secondary School and Arima Central Government, on 12th April and 14th April 2016, respectively. Students of Forms 3 and 5 were engaged to learn about marine conservation and possible career paths in the field of marine sciences. An estimated 80 students visited the IMA's booth.

Presentations on 'Careers in Marine Sciences' were delivered by G. Glasgow and K. Ganaselal.

Cotton Tree Foundation

After School Programme class

A new initiative began in April with The Cotton Tree Foundation, St. Ann's. The IMA was asked to participate in their After School Programme with students from Standards 1 to 3. Lori Lee Lum, Community Education Officer, will give monthly presentations until June on the topics: How Does the Sea Affect Me? How Do I Affect the Sea; Marine Pollution; and Coral Reefs. Students will learn about their link to the ocean, showcase its beauty, and also raise awareness of the threats to this vital resource. Approximately 20 students attended the April session.



TIDAL CALENDAR 2016

Institute of Marine Affairs
Hilltop Lane, Chaguaramas

R.I.K. Services Ltd.
(all branches)

UWI Bookshop
UWI Campus, St. Augustine

Rainy Days Gift Shop
Ellerslie Plaza

Mohammed's Book Store Associates Ltd.
(all branches)

The Newsstand
ANR International Airport, Tobago

FOR MORE INFORMATION: 634 4291 ext 2406

THE BLUE CORNER

Seahorses

Seahorses are truly unique, and not just because of their unusual equine shape. Unlike most other fish, they are monogamous and mate for life. Rarer still, they are among the only animal species on Earth in which the male bears the unborn young.

Found in shallow tropical and temperate waters throughout the world, these upright-swimming relatives of the pipefish can range in size from 0.6 inches (1.5 centimetres) to 14 inches (35 centimetres) long. Male seahorses are equipped with a brood pouch on their ventral, or front-facing, side. When mating, the female deposits her eggs into his pouch, and the male fertilizes them internally. He carries the eggs in his pouch until they hatch, then releases fully formed, miniature seahorses into the water.

http://animals.nationalgeographic.com/animals/fish/sea-horse/

Lined Seahorse *Hippocampus erectus*
Photo: Jeff Whitlock www.theonlinezoo.com

A publication of:
INSTITUTE OF MARINE AFFAIRS
Hilltop Lane, Chaguaramas, Trinidad, West Indies
(868) 634 4291
www.ima.gov.tt
ima.gov.tt @IMACHAG