Fish IN

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SIDC at CHOGM 2009



The Seafood Industry Development Company in collaboration with the Commonwealth People's Forum held a seminar entitled **"A Future for Fish in the Sea"** on November 22nd, 2009 at the People's Space which was located at the Queens Park Savannah. The Commonwealth Fisheries Programme presented its findings on the Caribbean Study Tour which focused on the impact of climate change on fisheries resources and also showcased the recently published book-report entitled "From Hook to Plate: The State of Marine Fisheries, A Commonwealth Perspective".

Mr. Milton Haughton, the Deputy Executive Director of the Caribbean Regional Fisheries Mechanism opened the seminar by remarking on the importance of the fisheries sector to ensuring food security and creating employment in the Caribbean. He discussed the role of the regional fisheries bodies in promoting sustainable fisheries and stated that shared fish stocks, including migratory and straddling species, which extend beyond the jurisdiction of any one state, can only be managed effectively through cooperative efforts of all states and entities that share or are otherwise interested in the resource.

Mr. Richard Bourne is a Senior Research Fellow at the Institute of Commonwealth Studies and co-editor with Dr. Mark Collins of "From Hook to Plate", a report to CHOGM on marine fisheries. This report is a product of a two year Commonwealth Fisheries Programme which involved study tours to observe fisheries management in twelve countries with case study inquiries into the situation of inshore subsistence fishers in four countries.

Mr. Bourne summarised the issues addressed in the report which included; World Trade Organization negotiations on fisheries subsidies, food security, climate change, illegal and unreported fishing.

The studies conducted for the programme point to the need for governments to have a better understanding of:

- The value of food security and community cohesion of artisanal fishing,
- The need to promote effective sustainable management regimes (including marine protected areas,
- The need to assist traditional fishing communities to develop non-fish incomes; and
- The need to build capacity among fishers, scientists and administrators

Dr Nicholas Watts of the Commonwealth Human Ecology Centre, closed the seminar by addressing the issue of the sustainability of coastal small-scale fisheries and the communities that depend on them. Focusing on the perspective of fisherfolk, Dr. Watts looked at co-management in the context of the multi-level governance of fisheries from the international level to regional level and then national level. He shared cases from Belize, Sierra Leone and South Africa that highlighted the differences in context of each fisher community and underlined the need to develop community based management using a bottom up approach.

TRAWLING

Trawling is one of the most common methods of fishing in the world. Trawling involves towing one or more trawl nets behind a boat or in between two boats, either through the water column or along the ocean's floor. Trawl nets are usually shaped like a cone or funnel with a wide opening to catch fish or crustaceans and a narrow closed end called a cod-end. Trawls can be used in water of various depths down to around 3000m, and nets differ by their mesh size.

Demersal trawls are used to catch fish or shrimp that live on the bottom of the ocean. Trawlers targeting finfish often use one net (this is called a single trawl) or two nets (twin trawl), whereas shrimp trawlers may use a single trawl (towing one net), a twin-rig (towing two nets) or a quad-rig (towing four nets).



The Fisheries Act, Chapter 67:51

The Fisheries (Control of Demersal Trawling) Regulations 2004

<u>Tobago</u>

- No trawling permitted within twelve (12) nautical miles of coastline

<u>Trinidad</u>

- No trawling permitted on north coast (east of Saut d' Eau Island)
- No trawling permitted on east coast
- Trawling on south coast permitted outside two (2) nautical miles from coast line
- A trawler that is not an artisanal trawler shall not trawl with an engine size of:
    - 180 horsepower or less, between 1-6 fathom isobath
    - in excess of 180 horsepower, between 1-6 fathoms isobaths in the Gulf of Paria
- A trawler that is not an artisanal trawler shall not carry out dermersal trawling at a distance inside of one (1) nautical mile from the coastline of the Gulf of Paria
- Trawling allowed (west of Saut d' Eau) outside of two (2) nautical miles from coastline between 15th November and 15th January each year 6am – 6pm



Handling Shrimp the right way!







Handling Shrimp At Sea

- ✓ **Avoid exposure to sun and wind**
- ✓ **Sort and wash to remove dirt**
- ✓ **De-head to reduce deterioration**
- ✓ **Dip in metabisulphite solution to retard black spot**
- ✓ **Rinse and pack in ice**
- ✓ **Boxes should have adequate drainage**
- ✓ **Avoid overfilling boxes**
- ✓ **Avoid long time delays during processing**

Shrimp are crustaceans belonging primarily to the Penaeidae family. They are found mainly on the muddy bottoms of coastal waters, where they are harvested using bottom trawls and occasionally specially constructed seines termed land seines.

Species such as the Southern pink, Southern white and Southern brown are commercially important in the Caribbean.

Shrimp are presented headless, peeled and de-veined or tail-on and are retailed whole on ice or processed and packaged as a chilled or frozen product.

On board the vessel

The quality of shrimp offered for sale to the consumer is influenced by handling and storage practices on board vessels or on shore.

At the time of landing on the deck, the catch should be sorted and rinsed in clean, chilled sea water. This serves to reduce the bacterial load and also remove any dirt that may be present.

The head should removed before the body is dipped in a solution of sodium metabisulphite. The metabisulphite creates an acidic environment which serves to retard the development of black spot (melanosis) on the shell. The removal of the head also prevents softening of the flesh and eventual mushiness.

Proper icing practices require the packing of a mixture of shrimp and ice in shallow boxes. The melt water should be able to drain away freely from the bottom of the boxes or crates. Overfilling of the boxes should be avoided since this could result in crushing when boxes are stacked. Additionally long time delays between landing and chilling as well as exposure to sun and wind should be avoided since this promotes dehydration and deterioration of quality.

The removal of the head, washing and storage in ice as well as maintaining an acidic environment therefore plays an important part in quality retention.

On shore handling

The catch should be rinsed with chilled potable water and re-iced to maintain the cold chain. Processing involves grading, peeling, de-veining and chilling/ freezing. The extent of processing is dependent upon the form in which it will be sold. It is either frozen and cold stored or retailed as a packaged chilled product. The latter must be kept between temperatures of 3° - 5°C. Processing should take place as quickly as possible and under hygienic conditions.

Proper practices involve freezing at the correct temperature and use of additives and glazes to protect against dehydration (freezer burn). Shrimp can

Tips for Freezing Shrimp

- ✓ Remove head and wash properly in chilled water
- ✓ Dip the processed product in an antioxidant solution
- ✓ Freeze at -18°C and lower in a blast freezer or plate freezer
- ✓ Glaze frozen product
- ✓ Package
- ✓ Cold store at -24°C and lower



Fig 1 Avoid shrimp that has been inadequately iced

Just a few more Tips!

- ✓ **Do not store shrimp in ice – water, since this contributes to nutrient loss**
- ✓ **Ensure that frozen shrimp packages have no ice crystals**
- ✓ **Check the processing /best before date on packages**
- ✓ **Avoid packages with unacceptable odours**

be frozen individually (IQF) or in bulk. Prior to freezing measures must be taken to protect against quality loss by dipping in polyphosphate which retards moisture loss and citric acid which retards oxidation. Shrimp will keep in good condition in cold storage for at least 18 months once properly frozen and stored.

Vacuum packing can also be used to give added protection. Frozen shrimp can develop cold store odours and flavours during storage. This can be avoided by dipping the product before freezing in a solution of citric acid to prevent oxidation and storing products at a temperature of -20° C and lower.

Shrimp are also retailed whole on ice (fresh). The typical shrimp flavour however disappears completely after six (6) days in ice and the meat becomes soft, discoloured and difficult to peel. After eight days it becomes sour, developing ammonia-like odours. Faecal odours are apparent from shrimp that have been stored in little or no ice (Fig 1).

Purchasing Shrimp

The following features would aid the consumer in distinguishing between good and bad quality shrimp:

	Texture	Colour	Odour
Good Quality	Firm, crisp to the touch	Characteristic to that of the species	Seaweed
Bad Quality	Soft, mushy, flesh peels easily from shell	Appears bleached; black spots may be present	Faecal Ammonia-like - due to long storage

Remember once shrimp has been properly harvested, handled and stored, they can be used to prepare a variety of dishes of the highest quality!

Company Display



The Seafood Industry Development Company had a company display at Long Circular Mall on 3rd December, 2009.

The objective of this exercise was to raise SIDC's profile among the public. Information about the company such as the company's mandate and the projects being undertaken were discussed by the staff of the SIDC. On display were the posters and other printed material produced by the SIDC for industry.

FISHING CO-OPERATIVES



A Co-operative is a business organization owned and operated by a group of individuals for their mutual benefit. The defining point of a co-operative is that the members have a close association with the enterprise as producers or consumers of its products or services, or as its employees. Thus, a fishing co-operative is organized to provide goods and services to persons involved within the fishing industry.

As fishing developed into a business with widespread marketing potential, fisherfolk in various parts of the world have developed co-operatives as a way in which individual fishers can escape the bondage of "trucking" systems. That need took root when they learnt that buyers of their fish products at the time were not paying fair prices. The buyers obtained their products at very low prices and were selling those same products at very high prices, realizing for themselves exorbitant profits.

In order for a fishing co-operative to be successful, member commitment is essential. For the long term success of the co-operative there must be: policy decisions made upon the basic co-operative democratic principle of one member, one vote; linkages established with relevant agencies; good communications; and members should must be kept fully informed at all times and allowed to participate constructively at regular meetings. There must be adherence to co-operative principles and values while ensuring compliance with the requirements of the fishing industry.

Fishing co-operatives are usually involved in activities such as the catching of fish; purchasing and marketing of fish and produce on members' behalf; purchasing equipment and supplies for resale to members; processing of marine products and selling by-products of the fishing industry; providing financing /loans to members to assist in undertaking fishing related activities.

Members of fishing co-operatives in turn can benefit from: access to credit facilities to undertake fishing related activities; provision of adequate marketing facilities; development of on shore activities and services (cold storage, boat repairs, fuel, lubricants, spare parts, security etc.); exposure to training and sharing experiences to improve methods of production.

Currently fishing co-operatives around the world are wrestling with issues involving the sustainability of their industries, especially the depleting fish resources and pollution. Arguably, fishing co-operatives given their special relationships with the communities of their members, have special responsibilities to ensure the sustainability of their activities, in order to ensure the sustainability of their livelihood.

Boating Safety Tips!

- Check the boat, engine and equipment before leaving
- Check the weather forecast and tides before leaving
- Tell someone where you are going and when you will return
- Avoid alcohol when boating
- Never overload the boat
- Do a safe boating course
- Take a proper life jacket for each person on board. Wear them!
- Have on board an anchor, bailer, spare fuel, torch, warm gear and water
- Guard against fire
- Know the Collision Prevention Rules, Navigation Safety Rules and Local Laws
- It would also be wise to take two means of communication such as VHF Radio, Flares, EPIRB or mobile phone in a plastic bag

Guayaguayare

The Guayaguayare landing site is located on the south eastern coast of Trinidad. Fishing operations are artisanal and the fishing fleet consists of pirogues that are based in the sheltered Guayaguayare Bay. The peninsular on the eastern side of the bay is also the site of a port that services offshore oil and gas operations.

There are 18 – 20 fishing vessels operating out of this site and the prevalent fishing gear used are multifilament gillnets to target pelagic fishes such as carite, kingfish, cavalli and sharks. Monofilament gillnets, banking lines and palangue are also used to target demersal fish such as salmon, croaker and red snapper. The commercially important fish landed at this site are carite, kingfish, cavalli, shark, salmon and croaker.

Fishing vessels from this site carry out daily fishing trips off the east and southeast coast, travelling as far as 75 to 80 kilometres offshore. Fishing takes place throughout the year but there is a peak in activity in the first quarter.

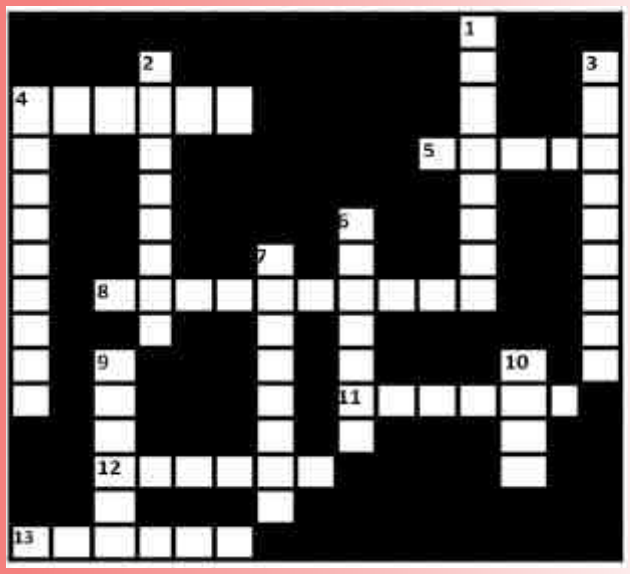
Annual fish landings for Guayaguayare/ Mayaro *(Fisheries Division, 2006)*, ranged from about 100 to almost 200 metric tons between 2001 and 2006 (the landings for these two sites are combined in the statistical records.). The total quantity of fish landed in Guayaguayare/ Mayaro in 2006 was reported as 193 metric tonnes with an estimated ex-vessel value of TT$2.2 million.

The South East Fishing Association(SEFA) and the Women in Fishing Association(WIFA) were both formed in 2004. WIFA is the first women's group involved in fishing in Trinidad and Tobago.





FISH fry CORNER



Across

4 The body covering of most fish
5 The largest shark
8 An animal with a backbone
11 This bony fish can live in salt and fresh water
12 The fin on the back of a fish
13 The paired fins on the underside of a fish

Down

1 The slowest swimming fish
2 A common flatfish
3 The gill cover of a bony fish
4 The most poisonous fish
6 The largest bony fish
7 The fins on the sides of a fish
9 Another name for the tail of a fish
10 The smallest fish

ANSWERS: Across: 4. scales, 5. whale, 8. vertebrate 11. salmon, 12. Dorsal, 13. pelvic
Down: 1. seahorse, 2. flounder, 3. Operculum, 4. stonefish 6. Oarfish, 7. Pectoral, 9. Caudal, 10. goby

Some Facts about TILAPIA

Tilapia is the common name for nearly a hundred species of cichlid fish from the *tilapiine cichlid tribe.* Tilapia inhabit a variety of fresh water habitats including shallow streams, ponds, rivers, lakes and estuaries. They have very low levels of mercury as they are a fast growing and a short lived fish that feeds mostly on a vegetarian diet and therefore they do not accumulate mercury found in prey.

The species *Oreochromis mossambicus* was first introduced to Trinidad in the 1940s but they were never accepted by the general public. In 1983 red strains of *O.mossambicus* were imported from Jamaica and in 1986 the species *Oreochromis niloticus* was imported. These species were accepted by both consumers and producers.

Tilapia are among the easiest and most profitable fish to farm. This is due to their diet that is mostly vegetarian, mode of reproduction (the fry does not pass through planktonic phase), tolerance of high stocking density, and rapid growth. They can be cultured in ponds, cages, tanks and raceways of various sizes and shapes. An important characteristic of tank design is the effective removal of solid waste. A circular tank with a central drain has been found to be the most efficient design.

Mixed cultures (both male and female populations) of tilapia cause overcrowding due to unwanted reproduction. Overcrowding leads to the competition of resources and stunted growth thus commercially grown tilapia are exclusively male cultures. Male cultures prevent spawning and also give better yield as males in general demonstrate a growth rate 40% faster than the females. All male fingerlings are produced using sex reversal techniques or by manually separating sexes. Another way of achieving all male cultures is through the use of Genetically Male Tilapia (GMT). Through a breeding programme males with YY genotypes (i.e. 2 male chromosomes) are produced. These YY males are known as "supermales" and have the unique property of siring only genetically male progeny. There are no genetic engineering techniques used in the development or production of GMT, just basic breeding. GMT are not genetically modified organisms (GMOs) and the debate about genetically modified food does not apply to GMT.

The ideal market size for tilapia is 1lb (5-6 months) for whole fish and 2lbs (11-14 months) for production of processed fillets.

The last three decades have seen significant developments in the farming of tilapia worldwide. Production levels reached 1,505,804 metric tonnes in 2002 (FAO). Tilapia has become the second most important farmed fish globally, next to carps and is now being described as the most important aquaculture species of the 21st century, with the species being farmed in about 85 countries worldwide (Shelton 2002).

Export potential for tilapia exists within the United States as new markets are being opened there not only in upper class restaurants but also in casual dining restaurant chains. Tilapia is seen as an ideal menu addition due to their reasonable price, year round supply, mild delicious flavour and flexibility in preparation. Great potential exists within Europe for market expansion as demand for tilapia is rapidly increasing there.

The SIDC through collaboration with the Institute of Marine Affairs has established a clear water intensive production system for tilapia using re-circulating technology at the Institute of Marine Affairs in Chaguaramas. The company is also in the process of establishing a tank based green water biofluc tilapia production system on its compound in central Trinidad.

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