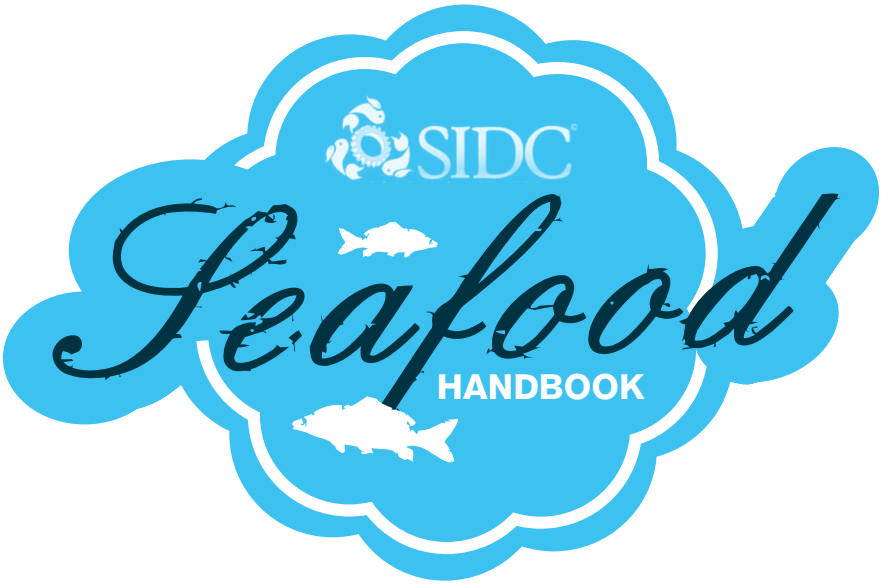

SIDC
Seafood
HANDBOOK
A CONSUMER'S GUIDE
TO THE PURCHASE, STORAGE
& PREPARATION OF SEAFOOD



A CONSUMER'S GUIDE TO THE PURCHASE, STORAGE & PREPARATION OF SEAFOOD

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Publisher: Seafood Industry Development Company Limted
Writer: Carla Marcelle (Seafood Consumer Education Specialist)
Contributing Writers: Dr. Doon Ramsaroop (Chief Executive Officer)
Charles Nurse (Quality Assurance Officer)
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Seafood Industry Development Company Limited
#6 Bejucal Extension 1,
Uriah Butler Highway, Charlieville

www.sidctt.com
Email: info@sidctt.com
Phone: 665-0751/672-3427
f: Seafood Industry Development Company Limited





A MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

As we are on the road to becoming a food secure nation, emphasis is placed on consuming food grown and harvested right here in Trinidad and Tobago. However, the safety and quality of food grown and sold is a cause for concern. The unsanitary conditions under which seafood is sold in our nation can inevitably result in food-borne disease outbreaks, thus putting further stress on our health sector.

The Seafood Industry Development Company Limited (SIDC) has embarked on a project entitled "Modernizing the Seafood Value Chain", which aims at improving the marketing of seafood. A modernized value chain would provide for improved seafood quality, increased regional and international market acceptability and increased food consumption. This project aims to provide information to the public in order to influence purchasing, handling and storage practices throughout the chain and influence change through the training of vendors and others involved in the seafood retail trade.

As part of the public education thrust of this project, "The Seafood Handbook: A Consumer's Guide to the Purchase, Storage and Preparation of Seafood" has been published. It is hoped that this handbook would create informed consumers, whose change in perception and purchasing attitude would influence a change in the overall vending practices within the seafood industry, so we can become better aligned with international best practice.

I hope that you use this book as a guide when purchasing seafood and remember to always eat locally harvested seafood. Do your part to decrease the food import bill as we are on our way to achieving food security.

Doon Ramsaroop
Chief Executive Officer

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Consumer perceptions of seafood quality and safety are usually different from the views of the persons involved in the processing and marketing of seafood. Consumers are not always aware of the proper purchasing and handling practices concerning seafood and the effect on seafood quality and safety.

Improper practices throughout the seafood value chain can result in the consumer receiving a product that is unsafe and unwholesome for consumption. The onus is on **YOU**, the consumer to determine whether or not you are receiving seafood of the highest quality.

This handbook is for **YOU**, the consumer. The Seafood Industry Development Company (SIDC) believes that the provision and transfer of information allows **YOU** to make an informed choice on the seafood you buy and enables you to get value for your money.

This handbook comprises four (4) sections:

- Purchasing Guidelines for Fin Fish and Shellfish
- Handling, Storage and Preparation in the home
- Know your seafood!
- Seafood...What can it do for you?

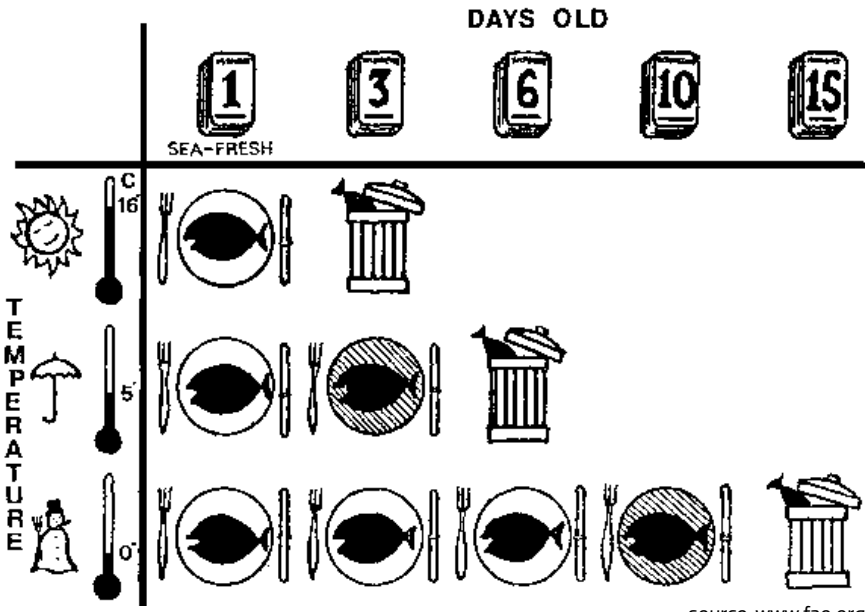
PURCHASING GUIDELINES FOR FIN FISH AND SHELLFISH

ICE IT! ICE IT! ICE IT!

Seafood is highly perishable and begins to spoil as soon as it is caught. Seafood lacks the tough muscular fiber of land animals such as beef, pork, lamb and chicken. The body temperature and natural environments of seafood is much cooler than land animals and as such, seafood **MUST** be iced as soon as it is caught.

Controlling seafood temperature is of paramount importance since bacterial growth and the production of biogenic amines such as histamine are reduced by rapid chilling and proper cold storage temperature. The higher the storage temperature, the faster seafood will spoil.

THE EFFECT OF TEMPERATURE ON THE KEEPING QUALITIES OF FISH



source: www.fao.org

Ensuring seafood quality and safety can be only possible through the combined efforts of fisherfolk, seafood vendors and YOU, the consumer.

Seafood should be iced on board vessel as soon as it is caught, while vendors should always display seafood on ice. Consumers must be prepared with a cooler and ice to keep fresh seafood cool and moist during shopping and during the drive home. Maintaining the cold chain 'from hook to cook' by keeping fresh seafood in clean ice, reduces the rate of bacterial spoilage and enzyme breakdown which contributes to seafood spoilage.

ICE

Ice when properly used reduces deterioration since:

- It eliminates the formation of 'hot spots' which contribute to accelerated deterioration of seafood quality
- As it melts, it cools seafood and washes away bacteria
- It prevents dehydration by keeping seafood moist



Seafood storage containers should have an outlet for the drainage of melt water, since melt water contains surface bacteria, dirt, blood and other product fluids which result in a loss of quality. Avoid purchasing seafood stored in bloody water.



PLANNING AHEAD

- Plan errands so your grocery shopping is the last stop. Make seafood your last purchase, so it retains the cold temperature and is not exposed to unsafe temperatures.



- After purchasing, seafood should not be placed in a hot vehicle (especially in the trunk of a car) for any length of time unless stored in ice or in an insulated cooler.



- Do not wrap seafood in newspaper. Newspaper ink is toxic and can be easily absorbed into seafood.

- To prevent contamination of other food, seafood should be placed in a plastic bag.

- Store your seafood in ice, in an insulated container or cooler bag. This ensures that the cold chain is maintained and product quality and safety is not compromised.



Purchasing seafood? To save time, plan your dish in advance and determine the best suited market form to use. The market form refers to the form or manner in which seafood is sold in a particular market and depends primarily on the size and shape. These features (size and shape of fish) also influence product yield. However, the vendor will prepare the fish in the market form that you desire.

MARKET FORMS

Whole fish is fish just as it comes from the sea, with fins, tail and entrails intact. It is also referred to as 'fish in the round.'



Whole bony fish are approximately 45% edible, whereas whole cartilaginous fish such as sharks and rays have a higher edible yield since their fins are also consumed.

Drawn/Gutted fish are fish in which the gut and viscera (entrails) are removed. The edible yield is approximately 48%. Drawn fish are excellent for baking with a stuffing.



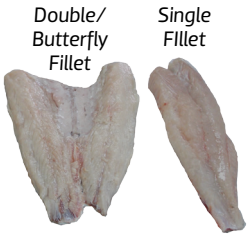
Dressed/Pan Dressed fish have the head, fins and tail removed. The approximate edible yield is 67% and it is suitable for a number of cooking techniques such as baking and poaching.




Steaks

Steaks are cross-sectional slices of the body, cut perpendicular to the backbone. They are ready to cook, with an approximate edible yield of 86%. Steaks are excellent for baking and grilling.

Fillets are boneless portions cut lengthways along the backbone. They have the highest edible yield (99%) of all market forms. The type of fillet obtained depends on the size and shape of the fish.

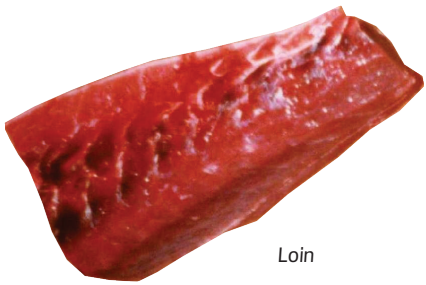


Quarter fillets are prepared when fillets from broad fishes such as Paoua and Mawan are cut lengthways to obtain four fillets.

Single fillets are best prepared from fish such as Snapper and Croaker.

Whole round fish can be de-headed and filleted only by cutting through either the back or the belly, creating a 'butterfly' style fillet once opened. Narrow fish such as Sea Trout and Bechine are more suitable for the preparation of double/butterfly fillets.

Sticks are elongated pieces of fish cut from blocks of frozen fillets. Portions are larger than sticks, approximately 10mm thick, uniform in shape and are cut from blocks of frozen fish.


Loin

Loins are obtained from large torpedo shaped species such as Swordfish and Tuna. They are derived by cutting lengthwise along the backbone to get long quarter fillets, thus the approximate edible yield is 99%.

SHELLFISH



Shrimp is marketed as whole, headless, peeled, and peeled and de-veined (P&D).

Whole shrimp is sold just as it comes from the sea. When the head is removed, it is referred to as headless and when the shell is retained, it is marketed as 'shell on'.

Butterfly shrimp are peeled and deveined shrimp in which the tail (fan tail) has been retained.



Peeled shrimp where the gut or 'sand vein' has been removed is referred to as P&D- Peeled and Deveined. When the gut has not been removed, it is referred to as PUD- Peeled and Un-deveined.

Shrimp is sold by weight and on the basis of how many shrimp weigh one pound. The smaller the number, the larger the shrimp. 16/20 means there are 16 to 20 shrimp per pound and is sized as jumbo, whereas 61/70 means there are 61 to 70 shrimp per pound and is sized as extra small.





Whole lobsters should be sold live, while the tails should be sold chilled or frozen.



Crabs must be purchased live with their claws immobilized to prevent injury. Crab legs and claw parts are marketed as frozen. Avoid purchasing DEAD crabs.

OYSTERS



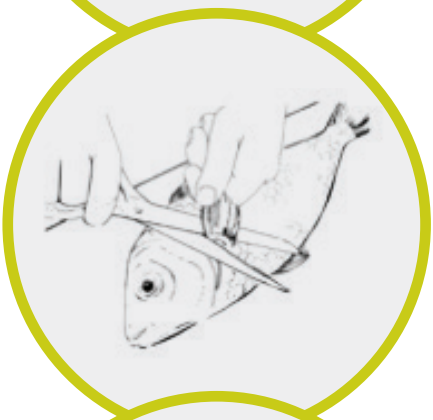
Oysters are filter feeders that are harvested from the sea or mangroves. They obtain their food by filtering large volumes of water when submerged. This feeding pattern allows them to obtain essential nutrients, but also allows accumulation of contaminants in their flesh. These contaminants can be responsible for causing food borne illnesses since locally harvested oysters do not undergo a depuration or purging phase in treated water. Purging allows them to excrete contaminants before human consumption. If not treated properly, the risk of contracting Cholera and other food borne illnesses is high. Locally, oysters are served raw with a highly seasoned sauce made from lime juice, salt, pepper and ketchup. Thus, the characteristic earthy flavor of the oyster and any 'off-odour' which can indicate spoilage is masked. This highly seasoned sauce **MAY NOT** kill bacteria and viruses associated with food borne illnesses.

DO IT YOURSELF!
FISH PREPARATION
GUTTING AND DRESSING OF FINFISH

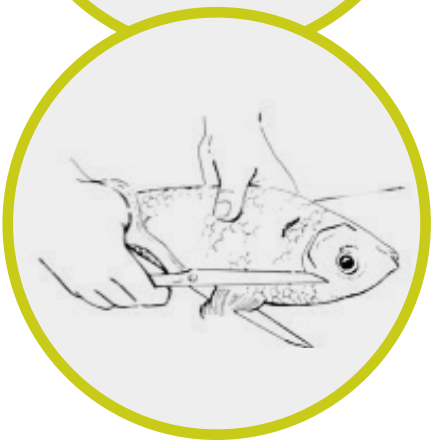
1 Start with a whole fish, with head, fins and entrails intact.



2 Remove pectoral fins with a scissors or a sharp knife.



3 Remove dorsal fins.



GUTTING AND DRESSING OF FINFISH



4 Slit open the belly cavity, from the isthmus of the throat straight down, but avoid cutting the anal pore.



5 Remove entrails (gut) with your fingers.



6 Remove gills and gut.

7 Scrape the backbone to remove any kidney blood.



8 Make a cut on either side of the fish's head just ahead of the pectoral fin.



9 Place the fish at the end of the table and snap the head off. Finish with a knife if necessary.

THE ENVIRONMENT

RETAILING OF SEAFOOD IN A HYGIENIC ENVIRONMENT IS CRITICAL TO RETAINING QUALITY!

Animals such as cats and dogs and insects especially flies should not be present where seafood is sold. Harmful microorganisms such as bacteria present on animals and insects can be transferred to food resulting in contamination and comprise seafood quality and safety.





The legs and the hairs on flies carry bacteria that can cause diseases such as Cholera and Salmonellosis. These bacteria are easily transferred to food or food contact surfaces resulting in contamination of seafood.



Microorganisms are tiny one-celled organisms





Seafood should not be sold in an unsanitary manner. Environmentally unacceptable surroundings encourage pests such as flies and rodents which can lead to contamination of seafood.

Dirty floors and countertops are responsible for the spread of harmful bacteria to seafood. This is a recipe for cross contamination and food poisoning.





Wooden cutting boards are inappropriate food contact surfaces, as they cannot be properly cleaned and sanitized. The surface provides a niche for harmful microorganisms such as bacteria and mold (fungus) to thrive and contaminate seafood.

Food grade hard plastic cutting boards are best suited as food contact surfaces. Plastic cutting boards can be cleaned and then sanitized by soaking in a solution of one tablespoon bleach per gallon of water overnight.



Contact surfaces for the sale of seafood should be continuous, durable and made from a non-porous material. Contact surfaces should not be painted or tiled, since these can easily flake or chip. Paint and tiles are chemical and physical hazards which can result in seafood contamination and food poisoning when consumed.

WHAT ABOUT PURCHASING SEAFOOD ON THE ROADSIDE?

This is not ideal but is common practice. Purchasing seafood on the roadside is not a wise choice because:



- Seafood is exposed to the elements and motor vehicle emissions.
- Parking on the highway is a breach of traffic regulations and can endanger your life and the lives of others.
- No adequate toilet or hand washing facilities are available for the seafood vendor.
- No proper solid and liquid waste disposal of gut and scales.
- Seafood is not displayed on ice!
- These practices will negatively affect the quality of seafood.

THE SEAFOOD HANDLER

Humans are a source of contamination since they can carry harmful microorganisms such bacteria on their skin, hair and clothing. Once personal hygiene is practiced, the risk of contamination is reduced.



Seafood handlers should be always properly attired. They should wear clean aprons (made from water resistant material) and hair restraints such as hair nets or caps.



Seafood handlers should not be bareback. They should not be smoking, eating or drinking when handling seafood.

Smoking, eating and drinking result in the transfer of saliva which contains harmful bacteria such as *Staphylococcus aureus* to seafood, resulting in cross contamination.

EVALUATING YOUR SEAFOOD

FRESH/CHILLED SEAFOOD

Quality attributes such as appearance, odour and texture are indicators of freshness. Although the sensory techniques for determining quality are quite subjective and species specific, they are reliable and correlate well with objective or laboratory testing techniques.

The following guidelines are useful in determining whether or not the product displayed is of the highest quality.

EYES



The eyes of high quality fish are bright, clear and full with black pupils and transparent cornea.



Poor quality fish have eyes that are flat, sunken and concave in the centre with a cloudy cornea and dull gray pupils.

SKIN



High quality fish have bright, shiny, iridescent pigmentation with most of the scales intact and adhered tightly to the skin.

Poor quality fish look dull, lacklustre, discoloured, bruised and bleached in appearance.

ODOUR

The odour of fresh fish varies from species to species. For example, the odour of Tuna differs from Carite. However, all good quality fresh fish have a mild seaweed odour similar to the ocean.

The odour of poor quality fish may vary from a slightly unpleasant to nauseating sour or ammoniacal odour. A fishy odour is a sign of loss in quality.

TEXTURE

The flesh of good quality fish is firm and elastic (springing back when pressed gently with the finger).

Poor quality fish is soft, limp and tears on pressure. If the tissue separates when it is gently bent, the connective tissues between the muscles blocks have begun to deteriorate indicating a considerable loss of quality.



This can be observed more easily in fillets.

GILLS



Gills of good quality fish should be bright red with little visible slime.

Gills of poor quality fish are grey or dull/dark brown in colour and contain thick slime.

QUICK REFERENCE TIPS!
EVALUATING FRESH/CHILLED FISH

Quality Attribute	Good Quality	Poor Quality
Appearance of eyes	Bright, clear and full with black pupils and transparent cornea.	Eyes are flat and somewhat concave in the centre, sunken, have a cloudy cornea and dull, grey pupils
Skin	Bright, shiny, iridescent pigmentation Scales intact and adhered tightly to the skin.	Dull, lacklustre, discoloured and bleached. Loose scales.
Odour	Fresh and mild. A fish just out of water has practically no odour.	Fishy, sour, faecal, ammonia-like.
Gills	Bright red with little visible slime.	Light pink, gray, dull/dark brown. Slimy
Flesh	Firm and elastic (springing back when pressed gently with the finger).	Soft and "mushy". When pressed with finger, the indentation remains.

PRE-PACKAGED CHILLED SEAFOOD

Pre-packaged chilled seafood has the benefit of convenience. However, one must pay attention to packaging and the quality of the seafood that is packaged.

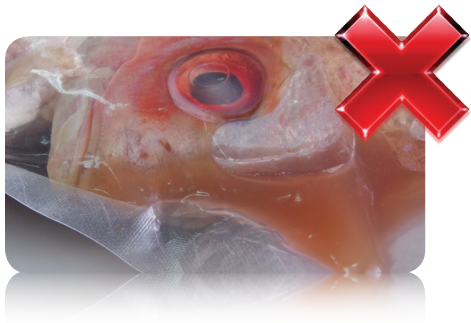


Observe that:

- **The package is properly sealed and offers a measure of protection to the product.**
- **The tray is clean and free of melt water**
- **The label does not obstruct the consumer's view of the product.**

Packaging material should be appropriate for the particular storage conditions and maintaining the intrinsic property of the product.





Observe that:

- **Plastic wrapping is torn, allowing entry to bacteria and other contaminants.**
- **The appearance of melt water in the package indicates poor product handling.**

SHELLFISH



Always purchase shrimp that are sufficiently iced. Ice washes away bacteria, keeps shrimp cool and moist and prevents spoilage and the formation of black spots.



Shrimp that are not stored in ice spoil faster. They develop a strong faecal or ammonia-like odour and have accelerated black spot formation.



Formation of black spots on the shell on shrimp stored without ice for 3 hours.



Shrimp heads contain more than 80 percent of the spoilage bacteria found in shrimp. So, headless shrimp are less likely to spoil than those with heads left on. The shells on shrimp tails should always be left on because they help reduce drying out (freezer burn) during frozen storage.

QUICK REFERENCE TIPS!
EVALUATION OF SHELLFISH

Shellfish	Quality Attribute	Good Quality	Poor Quality
Shrimp	Appearance	Shell should be firm around flesh and not slimy. The shell of raw shrimp may be greyish green, pinkish tan or light pink. Cooked shrimp have red shells and the meat is a similar red hue.	Black spots on the shell are a sign of melanosis and improper handling.
	Odour	Fresh and mild. Practically odourless.	Ammonical or faecal .
	Flesh	Firm and completely filling shell.	Soft "mushy" flesh. Loose shells.
Crabs & Lobsters	Appearance	Crabs, lobsters and oysters should be purchased LIVE. There should be movement of legs and claws. Shells should be clean without dark blotches or cracks.	Lack of movement and cracked and discoloured shells
Clams, Oysters & Mussels	Appearance	Clams, oysters & mussels should be sold LIVE. Moist shells which are tightly closed. Shells are hard, unbroken and reasonably clean.	If the shells gape slightly tap them, if they do not close do not purchase since this indicates death.

SHELLFISH



Lobsters which are exposed to direct sunlght should not be purchased.

Most molluscan shellfish are filter feeders, therefore they accumulate toxins present in their environment. When consumed, the following forms of shellfish poisoning can result:

- Amnesic shellfish poisoning
- Diarrhoeal shellfish poisoning
- Neurotoxic shellfish poisoning
- Paralytic shellfish poisoning



BACTERIA RESPONSIBLE FOR FOOD BORNE INTOXICATION AND INFECTION

Scientific Name	How is it transferred?	Symptoms
Staphylococcus aureus	Present on human, hair and skin	Nausea, vomiting, stomach cramps, diarrhoea, dehydration, headache, muscle cramps, transient changes in blood pressure and pulse rate
Vibrio cholerae	Shellfish harvested from contaminated sea water	Mild to severe diarrhea, abdominal discomfort, nausea, vomiting, fever, bloody stool
Escherichia coli (E. coli)	Undercooked meat, water	Mild to severe diarrhea, watery to bloody stool, nausea, vomiting, severe abdominal cramps
Listeria monocytogenes	Consumption of contaminated seafood.	Fever, muscle aches, nausea, vomiting and sometimes diarrhoea

Listeria monocytogenes are hardy, salt tolerant bacteria, which can survive in very low temperatures. They are found everywhere, but are more commonly found in soil. Since *L. monocytogenes* can grow at refrigerated temperatures (0–10°C), it has been implicated in chilled ready to eat seafood.



HISTAMINE POISONING

What is Histamine poisoning?

Histamine poisoning, also called Scombroid fish poisoning is a chemical intoxication occurring after the ingestion of seafood that contains high levels of histamine.

It is also called scombroid fish poisoning because of the high incidence of the poison occurring among species of fish belonging to the Scombridae family.

Which species are prone to histamine formation?

Tuna, Carite, Kingfish, Jacks, Ancho, Mahi-Mahi (Dolphin fish), Marlin, Wahoo and Bonito.

What causes Histamine formation?

Histamine is formed due to the action of certain bacterial enzymes on the amino acid histidine, converting it to histamine. The conversion is usually accelerated by storage of Scombroid fish at temperatures greater than 5°C and under unsanitary conditions. Histamine once formed is not destroyed by canning, cooking, freezing, salting or smoking.

What are the symptoms of histamine poisoning?

Symptoms include burning sensation in the mouth, headache, skin rash, nausea, vomiting and diarrhoea.

How can histamine poisoning be prevented?

Seafood must be stored at temperatures lower than 5°C (therefore the use of ice is critical). Fish must be gutted and bled as soon as possible and proper sanitary practices must be adhered to on board vessel or in the processing plant.

GUIDELINES FOR THE PURCHASE OF FROZEN SEAFOOD



Inspect packages for indication of poor product handling before purchasing.

Always purchase packaged seafood that is stored below the safe load line of the display freezer since this assures the quality of the product. Storage of products above the safe load line can result in thawing.



Load line- the distinctive line inside the freezer/display case which tells the retailer the height limit in which product can be packed.

If the product is not frozen while stored in the freezer DO NOT PURCHASE.



Packages should have the original shape and wrapping intact. Crushed/torn packages are not only visually unappealing, they serve to compromise the quality of seafood by allowing entry to harmful microorganisms, air and other contaminants.



There should be no signs of frost or ice crystals inside the package.



Frost or ice crystals indicate that seafood has either been stored at incorrect temperatures or thawed and refrozen.



Poor quality seafood show freezer burn especially around the edges.

Discolouration of the flesh may be due to oxidation and is common in species with a high lipid (fat) content.



The presence of liquid settling in the package of the frozen product indicates that the product has thawed and been refrozen. This leads to loss of quality.

QUICK REFERENCE TIPS!
EVALUATING FROZEN SEAFOOD

	Good Quality	Poor Quality
Appearance	Clean, glossy, and frozen.	Opaque & chalky. Evidence of dehydration (especially around the edges) & discoloration which may be due to oxidation or the presence of blood spots.
Odour	Little or no odour.	Fishy, rancid.
Packaging	Tight fitting to exclude air, prevent the loss of moisture and formation of ice crystals.	Loose and torn. Presence of ice crystals inside package.
Glaze	Intact and adequate to cover product.	Excessive, not intact.

Fish contains over 80% water. When fish is poorly packaged and subsequently frozen, water molecules escape from the surface causing the surface to dry out, making it appear 'dried out.' The texture of the fish is very dry and when cooked, is difficult to chew. Freezer burnt seafood looks pale in colour and if any fat is present, it becomes oxidized. The oxidized fats are responsible for the 'off' freezer flavor that is associated with freezer burn.



DATE LABELING ON PACKAGED SEAFOOD

Best Before Date is the anticipated date that an unopened food product, when stored under the appropriate conditions (as specified by the manufacturer) will retain its freshness, taste, nutritional value or any other qualities claimed by the manufacturer.

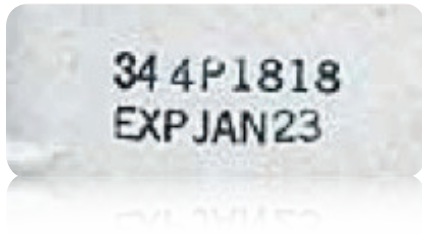
Best Before Dates dates do not assure product safety. However, it gives an indication of the quality and potential shelf life of the unopened food.



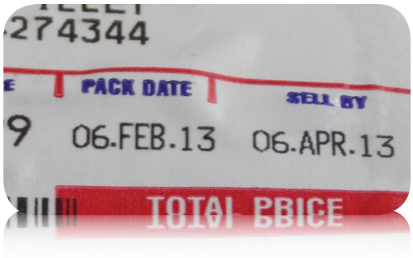


Use by/Best if used by dates can be used as a substitute for the best before date. This is the latest date recommended for the use of the product. This date is determined by the manufacturer of the product.

Expiry Date – after this date, the manufacturer cannot guarantee the safety and quality of the product. DO NOT PURCHASE OR CONSUME EXPIRED FOOD.



DATE LABELING ON PRE-PACKAGED FOODS



Pack/Package Date can be used as a guide in determining when a product is packaged. It is a guide to the consumer as to the potential quality status of the product.

Sell by Date tells the retailer how long to display the product for sale. This is basically a guide for the retailer, so the store knows when to pull the item from the shelf, and a guide for the consumer on the age of the product.

DO NOT PURCHASE SEAFOOD IF THE 'SELL BY' DATE HAS PASSED!

The conditions of storage can impact product quality, thus, the stated *'best before'*, *'best if used by'*, *'sell by'* and *'expiry date'* of seafood can only be used as a guide. High storage temperatures for chilled seafood will result in the onset of spoilage. Also, in frozen seafood, thawing and drip loss can occur, resulting in textural and quality changes in the product. Drip loss is the loss of moisture that occurs when seafood thaws.



SEAFOOD MISLABELING

Consumers must be aware of seafood mislabeling, whether deliberate or unintentional. Seafood mislabeling is considered economic fraud since sometimes one species of fish is labeled and sold as another.

Sea Trout is known locally as 'SALMON'. The label reads Salmon Fillet, however the package actually contains Sea Trout Fillets. This is deliberate mislabeling.



This label reads 'SALMON STEAKS' and in the international trade this is referred to as Salmon.



SEAFOOD MISLABELLING



This label reads 'CHILLED RED FISH,' however this is incorrect since the species of fish is not specified. There are several species which are red in colour such as Caribbean Red Snapper and Red Tilapia. The product in the package is in fact, Chilled Red Snapper and should be labeled as such.

This label reads WHITE FISH FILLETS. The term white fish only describes the colour of flesh and does not specify which species of fish is in the package.



READY TO COOK SEAFOOD

Most consumers are looking for fast, easy to prepare, ready-to-cook seafood which saves preparation time and are as good as home cooked meals.

Convenience foods comprise:

- Ready to Cook (RTC) – Seasoned and Unseasoned
- Ready to Eat (RTE) – Delicatessen and Comminuted

Although ready to cook products are convenient, the following should be noted:

- Type of seasoning – The acids found in lime and vinegar can cause protein denaturation, thus 'cooking' seafood and altering flesh texture. Therefore, seafood seasoned with lime and vinegar should not marinate for more than 30-60 minutes because of the delicate nature of the flesh.
- Seafood can easily absorb flavours. When left marinating for a long period of time, the authentic/characteristic flavour of the seafood is lost and the consumer cannot enjoy the true flavour of the fish.
- The use of vinegar to season seafood is NOT recommended

Pre-packaged value-added frozen seafood are also available at the supermarket. They include:

- Breaded products
- Breaded comminuted (minced or ground) products
- Seafood patties
- Seafood sausages

READY TO COOK SEAFOOD



The use of salt, peppers and limes result in 'cooking' of the flesh of fish and cause a change in texture and taste of seafood.

- Seasonings can be used to mask 'off odours' associated with deterioration. At times, this can be used as a strategy by the retailer to sell spoilt seafood. It must be noted, that seasonings MAY RESULT in deterioration of seafood.

- Frozen seafood is at times thawed and sold as chilled fish. This is an incorrect practice, since seafood is now subject to temperature abuse and the ideal conditions for bacteria to thrive.

SEAFOOD SHOULD NOT BE THAWED AND REFROZEN!

Always keep frozen foods FROZEN until ready for use.

ALWAYS FOLLOW COOKING INSTRUCTIONS AS ADVISED BY THE MANUFACTURER.

SUSHI & SASHIMI


Sushi

Sushi restaurants are becoming more common around the country. Sushi is a Japanese dish, consisting of ready to eat cooked rice that has been acidified with vinegar solution and formed with a variety of ingredients including raw or cooked seafood.

It is classed as a potentially hazardous food, since it is usually eaten without any further cooking. Persons with compromised immunity, pregnant or nursing women should avoid consuming sushi made with raw seafood. Food poisoning outbreaks associated with consumption of sushi are caused by the bacteria *Vibrio parahaemolyticus*, *Staphylococcus aureus*, *Salmonella spp* and *Listeria monocytogenes*.

Sushi must always be prepared with the freshest fish possible. In typical Japanese cuisine, sushi is served with a Wasabi paste and Gari (a sweet pickled ginger). Wasabi has anti-microbial properties which may reduce the risk of food poisoning. Gari is eaten with sushi to both cleanse the palette and aid in digestion.

Sashimi, frequently confused with sushi, are slices of raw seafood served by itself. Sashimi is also classed as a potentially hazardous food.


Sashimi

HANDLING, STORAGE AND PREPARATION IN THE HOME

PREVENTING CONTAMINATION AT HOME



- Wash hands thoroughly before and after handling raw seafood, to reduce the risk of contamination and food borne illness.



- Contact surfaces such as counter tops, cutting boards and utensils must be thoroughly cleaned with soap and water before and after exposure to seafood. Surfaces should be sanitized with a sanitizing solution (consisting of one tablespoon of bleach per gallon of water) after use. This prevents the transfer of bacteria from one surface to another. DO NOT MIX DETERGENT AND BLEACH! This can result is the emission of harmful fumes and also make the cleaning agent ineffective.

- Counter tops, cutting boards and utensils should not be used for other foods such as vegetables and poultry unless properly cleaned and sanitized. **DO NOT** use the same platter for cooked fish, which was used for raw fish. This prevents cross contamination by bacteria from seafood to other foods and vice versa.

WRAPPING SEAFOOD FOR THE FREEZER

- Plastic (saran film), plastic freezer bags and aluminum foil are three materials used for wrapping seafood for freezing. After wrapping in plastic, wrap seafood in aluminum foil to protect the film. Plastic wrap is best used for chilled storage.



ALUMINIUM FOIL SHOULD NOT BE IN DIRECT CONTACT WITH SEAFOOD.



- Plastic wrap if properly applied adheres tightly to the surface of the fish forming a moisture barrier that reduces the chances of freezer burn. It blocks oxygen transfer thus protecting the product from oxidation. This is extremely important for fatty fish such as bonito and sea trout which are prone to oxidative rancidity.



- Plastic freezer bags are extremely effective, once all the air is removed from the package, eliminating the risk of oxidation and freezer burn .

- Seafood that has been vacuum packaged will have the longest shelf life. Vacuum packaged seafood have been sealed by the total removal of air, thus the product is less prone to oxidation or moisture loss.



THAWING FROZEN SEAFOOD

The length of time required for the meal to be prepared will determine the type of thawing method to be used. Also, the length of time required for thawing, will also depend on the amount of product, market form and weight of product to be thawed. In order to maintain seafood quality, thawed seafood should NEVER be re-frozen.



Rapid thawing methods:

- Under cold running water – Place seafood into a waterproof plastic bag and run cold water until thawed.
- With the use of moving air – Place seafood product in a plastic bag on a clean contact surface and subject to moving air from an oscillating fan.
- Microwave– seafood can be defrosted in its original package using the defrost cycle.



Slow thawing method:

- Seafood can be placed overnight in the meat section of the refrigerator (bottom shelf). This method is good but excessive drip-loss can occur which can alter the texture of seafood.

ALWAYS MONITOR SEAFOOD DURING THAWING!

Thawing at room temperature should NEVER be done. This is a slow thawing process that allows warming of the outer product surface. Warmer temperatures favour the growth of spoilage bacteria on the outer portions while the inner flesh is still thawing.

Seafood should **NOT** be thawed in hot water. Hot water initiates cooking of tissue proteins, thereby altering the texture of seafood.

Smaller pieces of fish, such as portions or sticks can be cooked whilst still frozen, using the "Thaw In The Pot" method. This method facilitates easier handling and prevents drip loss.

Battered or breaded seafood products should never be thawed. Microwave cooking is also not recommended. It is best to follow the storage and cooking directions as stated by the manufacturer



SEAFOOD COOKERY

The low density flesh of seafood allows easy protein denaturation by heat or acid. This allows seafood to cook faster than other meats. The first rule of seafood cookery by any method is **DO NOT OVERCOOK**. Over cooking dries and toughens the flesh. When cooking, the amount of seafood, weight and market form should be considered. Thin fillets and steaks would cook faster than thick cuts or a whole fish. Small shellfish such as shrimp will cook faster than larger shellfish such as lobster.

To avoid over cooking, fish should be removed from heat when the outer edges are opaque but the center of the fish is slightly translucent. Fish should be allowed to stand, covered for a few minutes to complete the cooking process.

Still unsure if your fish is cooked? Check for doneness in the thickest part. Fish is done when it is opaque and flakes easily when probed with a fork in the center.



Doneness – the condition of being cooked to the desired degree.



Grilled Kingfish Steaks

FLAVOUR AND TEXTURAL PROPERTIES OF SEAFOOD

	Mild Flavour	Moderate Flavour	Full Flavour
Delicate Texture	Cutlass fish	Moonshine Tabac	Ancho (Bluefish) Banane Carite Mussels Oysters
Moderate Texture	Grouper Squid (Diamond Back) Catfish (Ocean) Tile fish	Cavalli Croaker Mahi Mahi (Dolphin fish) Jacks Octopus Pompano Shark	King Fish Marlin Moonfish Sailfish Swordfish Tuna Wahoo
Firm Texture	Snapper Tilapia	Bechine Brochet Grunt Mawan Mullet Paoua Plateau Sea Trout (locally called Salmon) Squid	Flying Fish Herring

COOKING TECHNIQUES

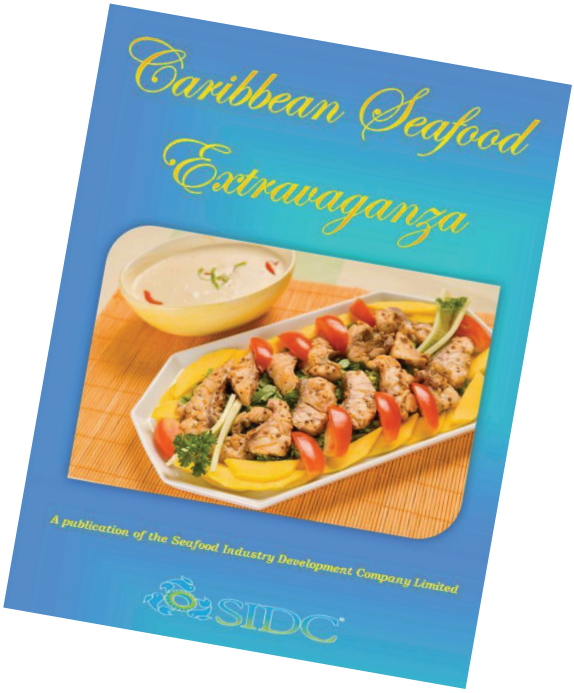
- Dry Heat- Baking Grilling, Frying, Roasting
- Moist heat- Poaching, Stewing, Steaming

Best Ways to Cook:

- Steaks and fillets - bake, barbecue, smoke, pan fry, pan-poach, steam, grill
- Small whole fish - bake, barbecue, smoke, broil, pan fry, pan-poach, steam
- Large whole fish - bake in sauce with stuffing, barbecue, smoke, poach

FOR DELICIOUS RECIPES, GET YOUR COPY OF THE SIDCs CARIBBEAN SEAFOOD EXTRAVAGANZA COOKBOOK!

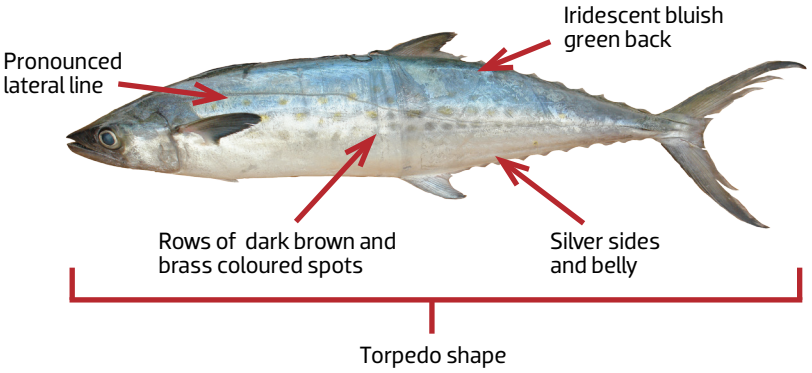
AVAILABLE AT THE SIDC OFFICE!



KNOW YOUR SEAFOOD!

This section seeks to highlight identifying features/characteristics of common fin fish found at the fish landing site, fish market or supermarket.

CARITE



Purchasing Tips

Carite should have clean, clear full eyes, pink to red gills free of slime, skin should be bright and lustrous and have no fishy odours.

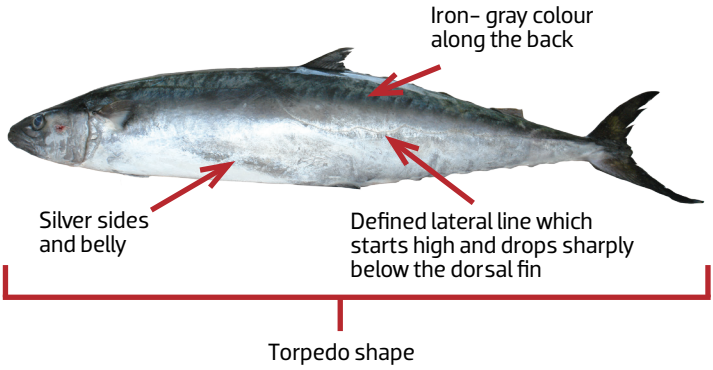
Carite is usually marketed as fresh fish but it also sold frozen.

EDIBLE YIELD	
Whole Drawn	90%
Steaks	80%
Fillets	67%

Eating Qualities

Carite has a relatively high fat and proteint content. Its medium dense bluish white flesh becomes blue-grey and flakes easily when cooked. Carite has a strong flavour and is excellent for baking and poaching.

KINGFISH



Purchasing Tips

Kingfish should have clean, clear full eyes, pink to red gills free of slime, skin should be bright and lustrous and no fishy odours.

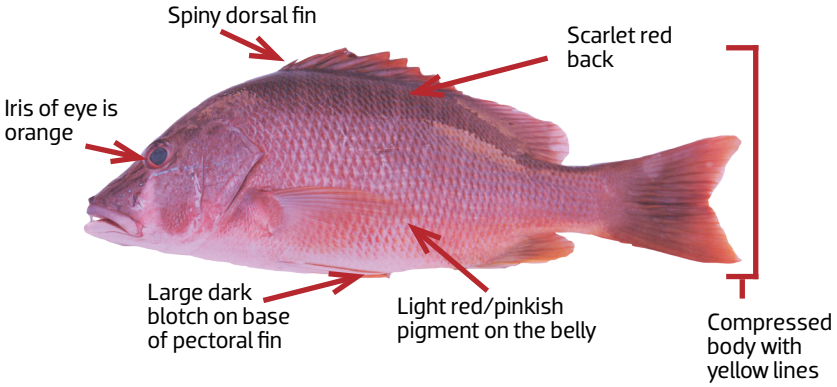
Kingfish is marketed fresh or frozen as fillets, steaks or in the round.

EDIBLE YIELD	
Whole Drawn	90%
Steaks	80%
Fillets	60-65%

Eating Qualities

Kingfish has a high fat and protein content. As with most mackerels, kingfish has a distinctive strong, savory flavour. Its blue-grey meat has a moderately firm texture which makes it excellent for barbecuing, baking and broiling.

DOG TOOTH SNAPPER



Purchasing Tips

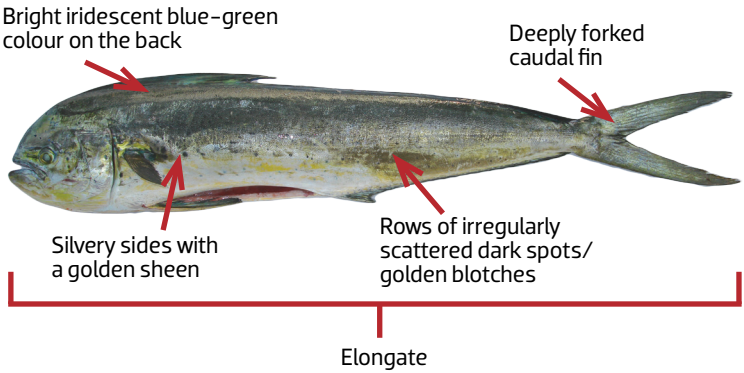
Snappers should have clean, clear full eyes with an orange iris. They are marketed as whole, drawn and fillets.

EDIBLE YIELD	
Whole Drawn	90%
Fillets	48–52%

Eating Qualities

Red Snappers are very high in protein and moderately lean. Its flesh is creamish white or pinkish white in colour, and medium dense. Its mild flavour and firm texture makes it excellent for baking, grilling, poaching and sauteing.

MAHI MAHI (DOLPHIN FISH)



Purchasing Tips

The natural colour of the Mahi Mahi fades rapidly after death. This can be used to judge quality.

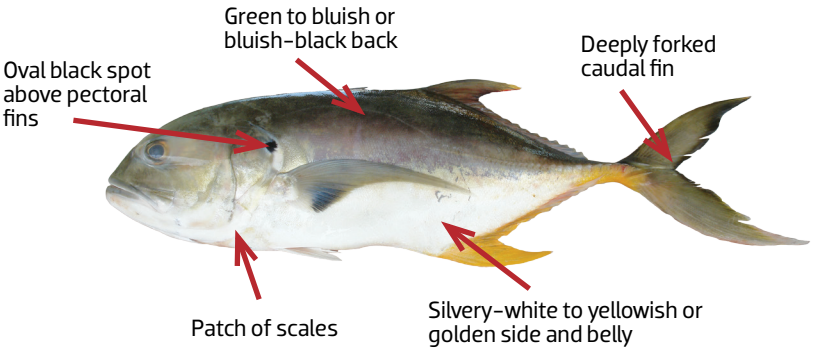
Mahi Mahi is marketed as whole, gutted, fillets and steaks.

EDIBLE YIELD	
Whole Drawn	90%
Steaks	80%
Fillets	60-65%

Eating Qualities

Mahi Mahi has a low oil content and is very high in protein. The blue-grey coloured flesh is medium dense with extra firm flakes, thus it is excellent for grilling, frying, broiling and baking.

CAVALLI



Purchasing Tips

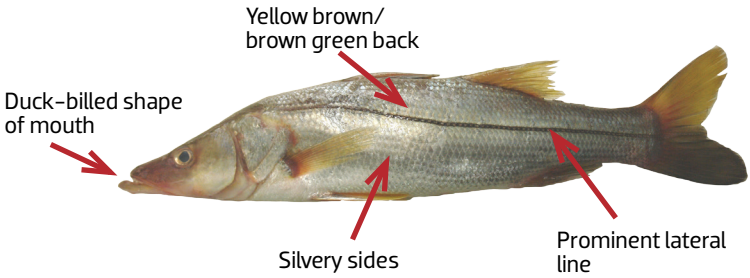
Cavalli is marketed fresh and drawn.

EDIBLE YIELD	
Whole Drawn	76%

Eating Qualities

Cavalli is high in protein and oil. Its flesh is medium dense with extra firm flakes. The colour of the flesh is progressively redder/darker moving outwards from the centre of the flesh to the area below the skin. Recommended cooking methods include baking, barbecuing, grilling and frying.

SNOOK (BROCHET)



Purchasing Tips

Snook should have clear full eyes and red gills that are free of thick slime. The skin should be bright and lustrous and there should not be any fishy odours.

Snook is marketed as whole and gutted.

EDIBLE YIELD	
Whole Drawn	62%

Eating Qualities

Snook is low in oil and high in protein. Its white flesh is medium dense and extra firm which flakes easily when cooked. Snook has a characteristic flavour which makes it ideal for salting, smoking, grilling, baking and poaching.

SEAFOOD... WHAT CAN IT DO FOR YOU?



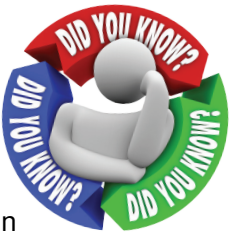
- Seafood is an important source of high quality animal protein and long chain fatty acids like Omega-3s (fish oils) which are essential for brain development and heart health.
- Fish oils ease inflammation and pain associated with arthritis.
- Cultures whose diets are rich in seafood are less prone to heart disease.



- Seafood is an excellent source of vitamins A, B and D. Vitamin A is essential for healthy eyes, skin and respiratory systems. Vitamin B is important for the nervous system and digestion of food. Vitamin D is necessary for adequate absorption of calcium which is essential for healthy bones and teeth.



- Pregnant mothers are advised to eat fish in greater amounts especially during the last trimester when brain and neural development is greatest since omega-3s promote proper neural and brain development in the growing foetus.
- Pregnant women who avoid eating seafood run a high risk of developing post partum depression which has been ascribed to the lack of a specific fatty acid DHA (Docosahexaenoic acid) in their diet. DHA is a major component of fish oils.



- Pregnant women should avoid excessive consumption of large pelagic species such as Marlin and Tuna, since large species have be implicated in Mercury poisoning. However, the benefits of consumption of these species in small or recommended amounts far outweigh the cons.



- Seafood contains essential dietary elements and some of these elements are present in the highest quantities in seafood such as DHA.
- Seafood is associated with increased metabolism which counteracts weight (obesity) problems.



FREQUENTLY ASKED QUESTIONS

How often should I eat seafood?

You should eat seafood at least twice a week.



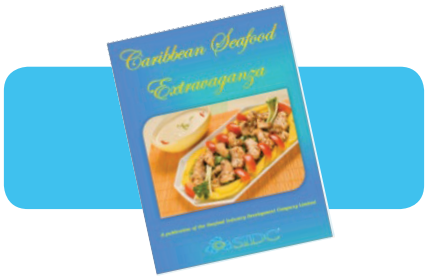


Are some fish species better than others?

No, although fish differ in texture and taste, they more or less have similar nutritional attributes.

If I take daily capsules of fish oil, do I need to eat fish?

Yes! There is nothing like the real thing! Capsules provide a higher concentration of fish oils, however seafood provide oils as well as other essential nutrients.



If I have to eat fish, how do I prepare it?

The SIDC Caribbean Seafood Extravaganza Cookbook offers an array of recipes for you to try!