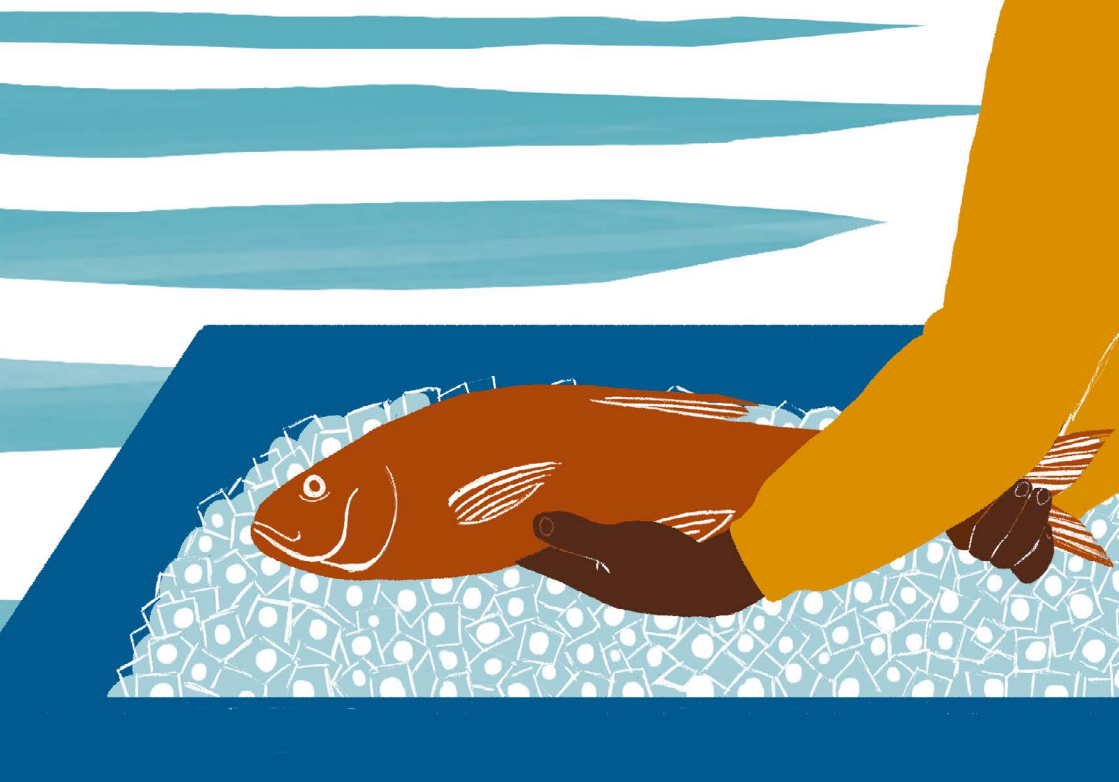




Food and Agriculture
Organization of the
United Nations

TAKE CARE OF YOUR CATCH

A guide to fish handling on board small boats



TAKE CARE OF YOUR CATCH

A guide to fish handling on board small boats

by

Ansen Ward

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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PREPARATION OF THIS DOCUMENT

This guide is based on work done by Ansen Ward for the European Commission Better Training Safer Food (BTSF) World-financed activities. Those who helped with the development of the guide include:

- Carlina LaBorde, Fisheries Officer; Alisa Martin, Laboratory Manager; and Geunette King, Fisheries Inspector, all of the Fisheries Division, Saint Vincent and the Grenadines;
- June Masters, Caribbean Regional Fisheries Mechanism;
- Moran Mitchell, Fisheries Officer, Fisheries Department of Grenada;
- Andre Kong, Director of Fisheries; Shellene Berry Reynolds, Fisheries Sociologist/Social Worker; Fitzroy Harrison, Fisheries Instructor, all of the Fisheries Division of Jamaica;
- David Murray, marine protected area warden, and the fishers of Oracabessa, Jamaica.

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The resources used in the preparation of this guide include:

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Ward, A. & Beyens, Y. (Nd.) *Fish handling, quality and processing. Training of community trainers manual*. Ebene, Mauritius. Indian Ocean Commission (IOC) and European Commission SmartFish Programme.

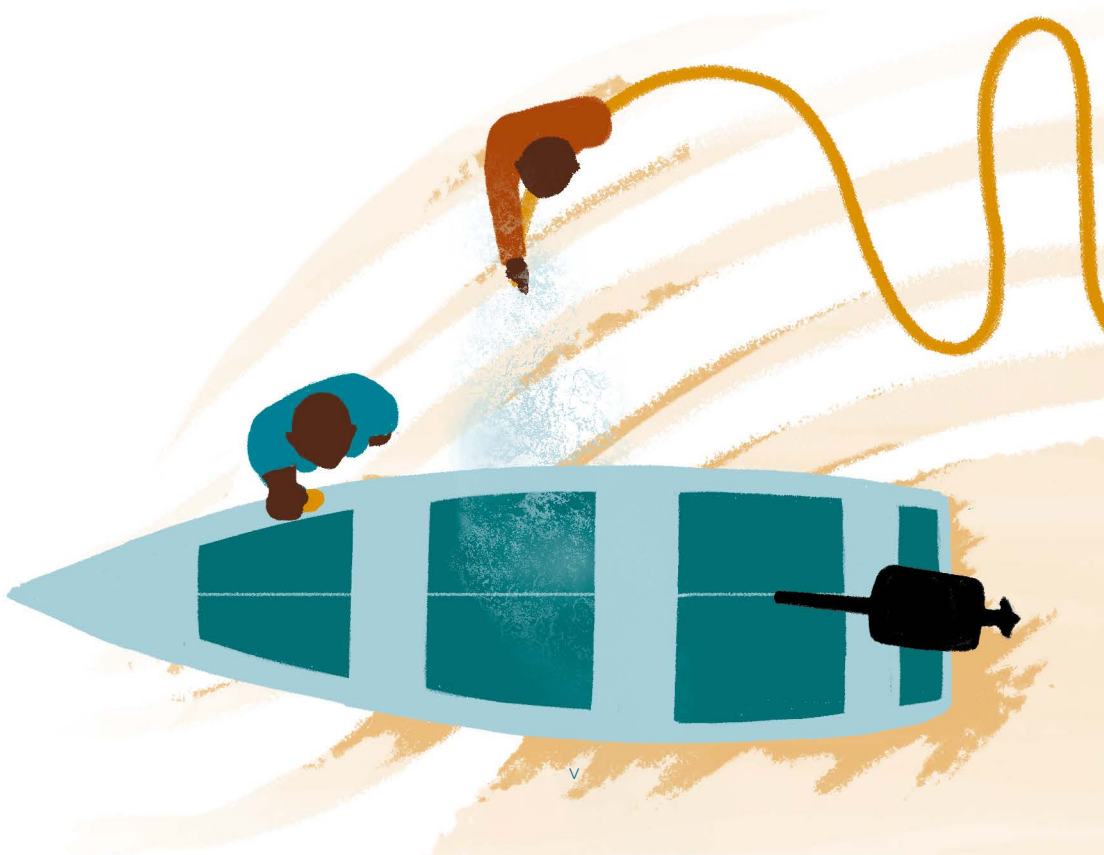
Ward, A. 2017. *Take care of your catch: a guide for fishers to on board fish handling on small boats – St Vincent and the Grenadines/Grenada/Jamaica*. Unpublished. [Contract Number: EAHC 20129612. Improving and strengthening the sanitary and phytosanitary framework in non-EU countries (BTSF World). Better Training for Safer Food initiative – Lot 2 – Food safety and plant health in South, Central America and the Caribbean. Sustained training and technical assistance missions (STM)].

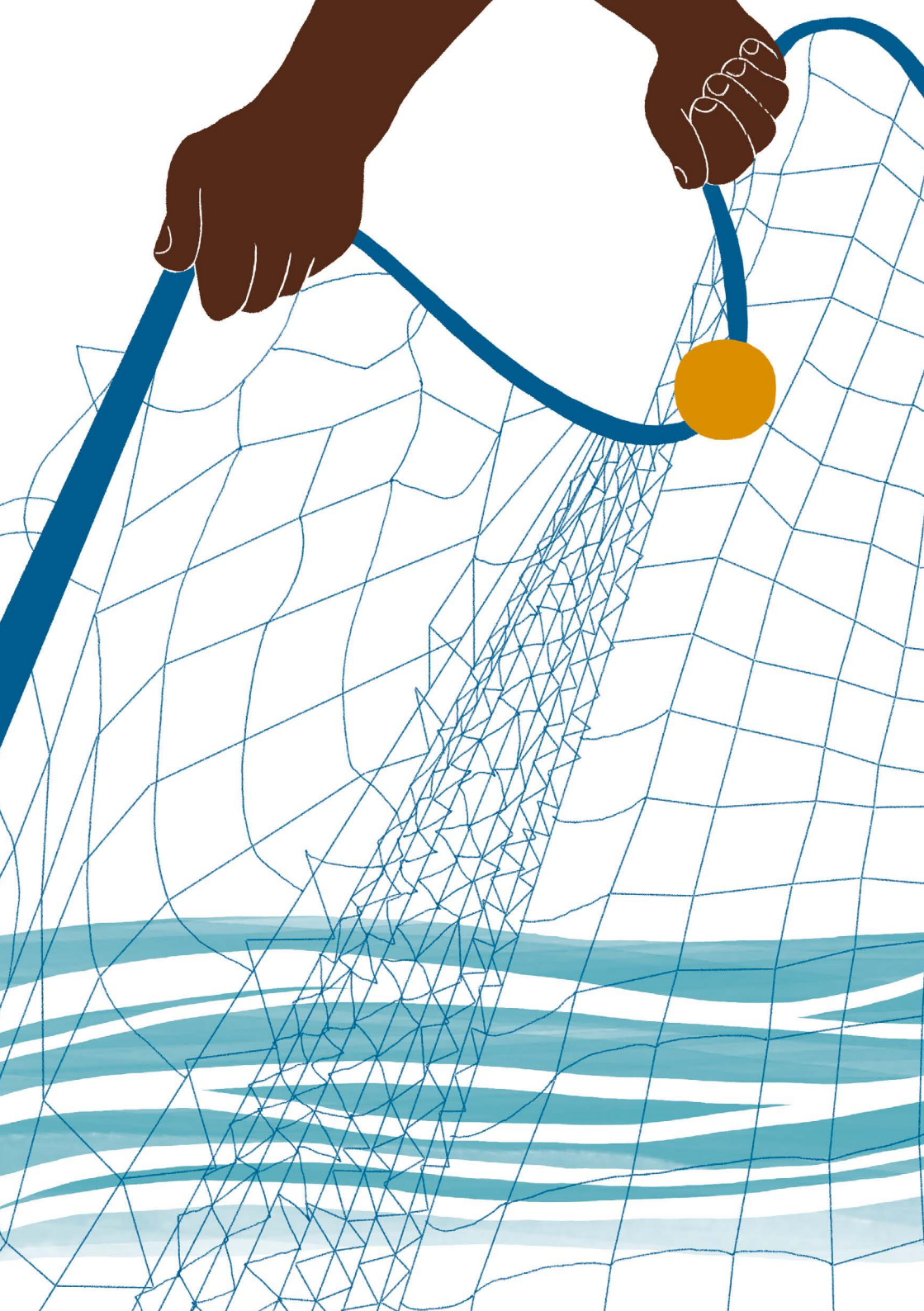


ABOUT THIS GUIDE

Fresh fish is an important source of food and income. Its quality is affected by handling and hygiene practices at all stages – from fishing to consumption. What happens to fish after it is caught has a big impact on its quality. Good handling and hygiene practices must be used on board fishing vessels.

This guide is for fishers, vessel owners, extension services and anyone interested in how to maintain fish quality. The guide describes good handling and hygiene practices that will help fishers maximize the value of, and income from, fish. It will help fishers meet required standards and access new and high-value markets.





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INTRODUCTION

The fishing industry is an important economic sector, providing jobs, income and food to many people.

Fishers have to make sure that fish is handled properly and is good quality so that it is safe for everyone to eat. Keeping fish clean and making sure good quality fish is sold is important so that consumers, both locally and internationally, get healthy, safe fish to eat. It also guarantees a good price for the fishing community.

This guide shows how to take proper care of your catch. It will help you to sell top quality, safe fish to people at home and abroad. Everyone, no matter which country they live in, has a right to eat good quality, healthy and safe fish.

The guide gives you information on:

- fish quality and spoilage;
- how to handle your catch at sea and during landing;
- why keeping fish, equipment and yourself clean is important;
- why you need to record information on where the fish was caught; and
- checks you can do before, during and after fishing.

You can use this guide yourself and to tell other fishers how to handle fish well.

Good quality fish makes more money!



FISH QUALITY AND SAFETY

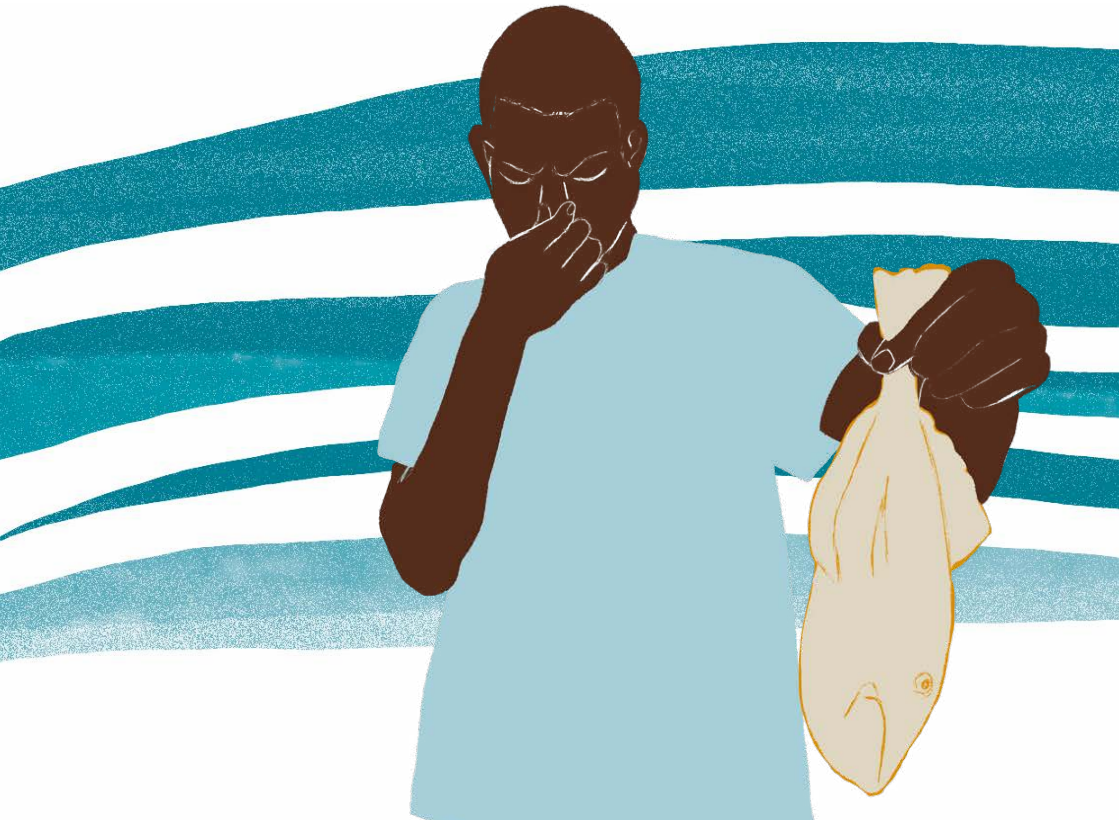
After a fish dies, its colour changes. It starts to smell and go soft. If these changes go on for a long time, the fish becomes spoiled and can harm the consumer.

The time it takes for a fish to spoil depends on: species, size of fish, fishing method, how it is handled and the temperature at which it has been stored.

If fish is poor quality it means:

- you will get a low selling price;
- it will not keep for very long;
- you will have to sell it quickly;
- you won't be able to bargain on the selling price;
- you won't be able to sell it to the international market; and
- consumers might get sick.

Poor quality means low price!



If fish is good quality it means:

- you get a high selling price;
- it can be stored for a long time and you can bargain over the price;
- it can be sold in international markets; and
- the consumer is happy and healthy!

Why bad fish can be dangerous to eat and why fish goes bad	How to avoid this problem
Fish goes bad	Use ice after catching Land fish quickly and sell it quickly
Fish has fuel on it	Keep fish in boxes away from fuel and other chemicals Keep boat and equipment clean
Contains histamine (allergy-causing chemical produced in some dead marine fish)	Keep fish cool and iced after catching
Contains bacteria or other things that make people sick	Make sure the boat, equipment and you are clean Don't wash in harbour water

Good quality means good price!



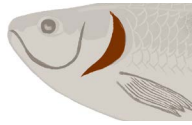
HOW CAN YOU TELL GOOD QUALITY?

😊 **GOOD QUALITY**

😞 **POOR QUALITY**



Gills are red



Gills are pale or brown



Eyes round and clear



Eyes sunken and cloudy



Colour bright and shiny



Color dull



Firm flesh



Soft flesh



Fresh smell



Bad smell

Use this table to tell the quality grade of fish:

GRADE	GOOD	AVERAGE	POOR	SPOILT/REJECT
Skin	Bright shiny	Loss of brightness	Dull	Dull, bleaching, shrunk
Slime	Clear	Milky	Yellow clotting	Brown, clotted
Eyes	Round, clear	Flat, little, milky	Sunken, grey middle	Very sunken, very cloudy
Gills	Bright red	Pink	Grey	Brown
Lining inside stomach	Shiny	Slightly dull	Dull, can tear from flesh	Easy to tear from flesh
Smell	Fresh, Seaweedly	No odour	Musty	Strong musty

WHAT IS MEANT BY SAFE FISH?

People buy fish because it is a healthy food. But people get sick from eating fish that has picked up bacteria or has come into contact with fuel or other chemicals. If people get sick from eating your fish, they are not going to buy your fish again. If your fish is not safe then it will not be allowed on the international market.

HISTAMINE

Histamine is a chemical made by bacteria. Histamine causes food poisoning. Histamine may be found in marine fish such as tuna, mackerel, herring, sardine, anchovy, bonito, dolphin fish or mahi mahi, marlin, jacks, robin and rainbow runner. Bacteria make histamine when the fish is left in the sun and is not iced quickly. Histamine causes an allergic reaction in consumers. It can cause a burning or itching feeling in the mouth and make people unwell. Cooking the fish will not get rid of histamine.

CIGUATERA POISONING

Another type of poisoning is caused by eating large marine fish such as barracuda, grouper, snapper, moray eel, amberjack, couvalli, wahoo, mackerel, surgeonfish, and parrotfish which have eaten smaller reef fish that have a poison in them called Ciguatera. These small fish have got the poison from eating a type of plankton. When a fish with ciguatera in it is eaten the person will vomit and have diarrhoea and feel strange.

FISH SPOILAGE AND WHY IT HAPPENS

Fish are usually good to eat and good quality when they are first caught. But after the fish dies it changes and starts to go bad or spoil.

Several things cause fish to spoil or 'go bad'. These are:



Stress



Bacteria



Enzymes



Rough handling



STRESS

The more a fish struggles in the net or on the hook and when it is pulled into the boat, the lower the quality of the meat. When a fish struggles it builds up some chemicals, such as lactic acid, and loses others in its meat which lowers its quality.

BACTERIA

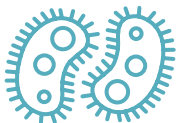
Bacteria are everywhere. They are in the sea and on land. You can't see them unless you have a microscope.

Some bacteria eat fish after it is dead and cause it to smell and go soft. Other bacteria cause food poisoning and make people sick. These bacteria cause typhoid, cholera and other illnesses. Bacteria like warm temperatures.

TWO TYPES OF BACTERIA

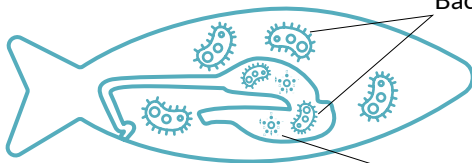


Make you sick



Make fish spoil

WHERE ARE BACTERIA AND ENZYMES



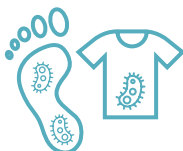
Bacteria on outside and in stomach

Enzymes in stomach

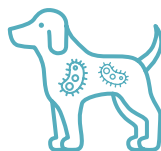
BACTERIA ARE FOUND IN DIRTY PLACES



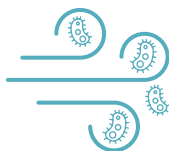
Dirty toilets



Dirty clothes and feet



Animals



In the air



Hands

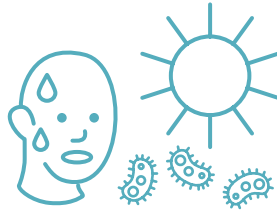


Insects

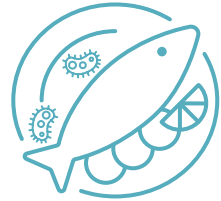
WHAT DO BACTERIA LIKE



Water

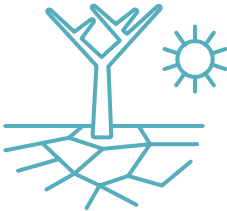


Warmth



Food

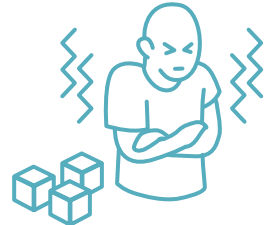
WHAT BACTERIA DON'T LIKE



Dry conditions



Very hot temperatures



Cold



ENZYMES

Enzymes are like chemicals. They are inside all animals including fish, shellfish and squid. They help to keep the animal alive.

After the fish dies, the enzymes start to digest or eat the fish. They eat into the stomach and flesh of the fish. This makes the fish go soft and changes its taste.

Enzymes work faster when the fish is warm.



ROUGH HANDLING

Fish are very easily damaged. They must be handled with care at all times. Throwing, dropping or standing on fish will damage them and cause bruising, softening of the flesh and poor eating texture. More bacteria will also get onto the fish.

When the fish is damaged, bacteria and enzymes can move easily into the flesh. Rough handling will also make the fish look bad which will mean you get a low price.

HOW TO KEEP FISH QUALITY GOOD ON BOARD SMALL BOATS

Important things you can do to stop spoilage and make sure fish are safe to eat, and the best quality, are:



Be quick



Keep it cool



Keep fish clean



Keep equipment clean



Keep yourself clean



Handle with care



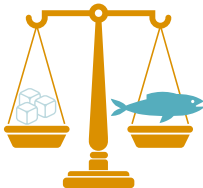
BE QUICK

The longer the fish is left in the water before it is brought on board and the longer the fishing trip, the more time fish has to spoil. Short fishing trips mean good quality fish. If you do not carry ice on board then fish should be landed no more than five hours after it is caught.



KEEP IT COOL

Warm temperatures help bacteria grow quickly and spoil the fish. Protect the fish from sun and chill it using ice. Take ice with you when you go fishing.



**For every 1 kg or bucket of fish,
you need at least 1 kg or bucket of ice.**

Ice melts, so keep adding more ice to fish during long fishing trips.

Ice should be:

- made from water of drinking quality;
- stored in clean boxes or bags;
- from a government-approved provider;

If water is mixed with ice, make sure only clean water is used.

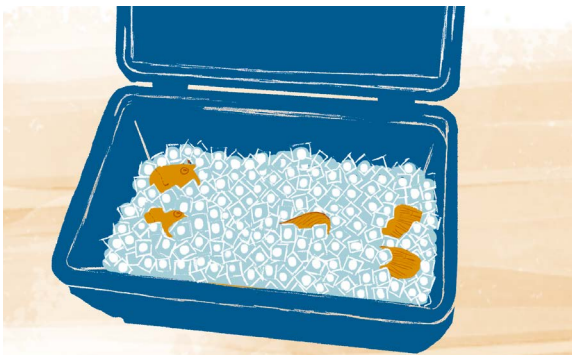
HOW TO USE ICE WELL



1
Use clean, well-made insulated boxes to stop ice from melting quickly. Good icing is when you place a layer of ice on the bottom of the box...



2
Then place fish carefully into the box and cover with another layer of ice. Keep adding fish and ice layers...



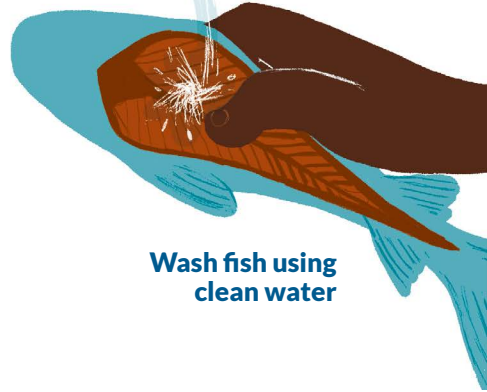
3
Cover the last layer of fish with ice and keep the lid on the box.

If you do not have ice, then cover the fish with a clean, wet cloth or blanket. Keep it wet. The evaporation of water from the cloth helps to cool the fish. If you do this, land your fish no more than five hours after catching it.

**Remove the fish's gut
to take away bacteria
and enzymes**



**Wash fish using
clean water**



**Keep fish away from fuel.
Store fuel well
and keep the boat tidy**





KEEP FISH CLEAN

It is good to:



remove the fish's gut to take away some bacteria and enzymes



keep fish in a clean place or box



use clean equipment



wash fish in clean water to remove bacteria.



keep fuel separate from the fish holding area in the boat



remove hooks from fish



never put fuel and oil or cleaning products near the fish or ice



never use harbour water for washing



never leave fish lying in the boat.

Try not to fish in polluted or dirty water and places where the water is a brown or red colour. This colour can be caused by plankton which can cause ciguatera poisoning.



**Keep equipment
in good condition**

**Paint the inside
of the boat with
food grade paint**



Keep your boat clean



**Any materials used to protect
fish on board, such as boxes,
should be cleaned properly**



**Clean the equipment
before fishing**



KEEP EQUIPMENT CLEAN

It is good to:



only use fishing boats for fishing



clean boats and equipment before fishing



use clean fishing gear



keep fish containers or the fish hold very clean



use boxes and fish holds that have smooth surfaces and are in good repair



use only clean, pipe water, or clean water found offshore, for cleaning



use knives and machetes that are made from stainless steel



inspect boat and equipment regularly for damage and keep in good condition



paint the inside of boats with food grade paint.

Animals should not be allowed in places where the boat moors, or where fish is being handled or stored.

Bait fish can contain large amounts of bacteria, so try to keep bait fish away from your catch.

Remember that good cleaning means good, safe fish!

GOOD CLEANING PRACTICE

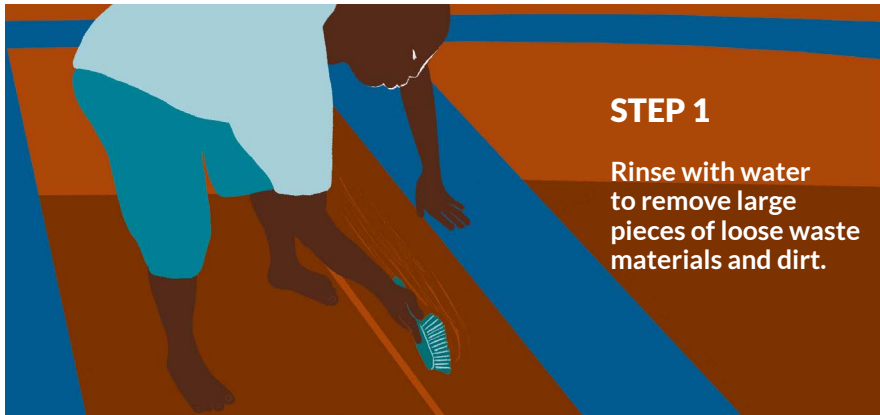
Here are some tips on how to clean your boat and equipment well.



To clean your boat and equipment properly you need to use clean water.

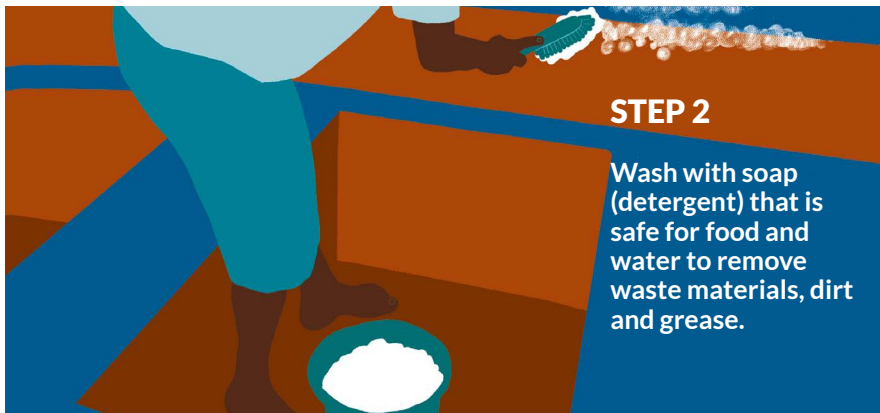


You will need a detergent or soap to remove the dirt. You will need a disinfectant to kill bacteria.



STEP 1

Rinse with water to remove large pieces of loose waste materials and dirt.



STEP 2

Wash with soap (detergent) that is safe for food and water to remove waste materials, dirt and grease.



Keep yourself clean and wear protective clothing



Take soap to sea



KEEP YOURSELF CLEAN

If you are not clean, you can pass dirt and bacteria onto the fish.

It is good to:



wash hands with soap and clean water before handling fish



take hand washing soap (liquid soap) and some clean water when you go fishing



keep your clothes clean



wear protective clothing that is easy to clean



be in good health – if not, your sickness can be passed to the fish and then to the consumer



cover any wounds so that blood and other fluids do not come into contact with the fish



do not wear jewellery that can hide bacteria



never spit, cough/sneeze, over the fish



keep your fingernails short, do not smoke, eat or drink when you are handling fish or are near fish

Kill live fish quickly



**Fish boxes help unloading
and protect fish from damage**





HANDLE WITH CARE

You need to handle fish with care so you don't damage it, put more bacteria on it and make it spoil faster.

It is good to:



never throw fish around



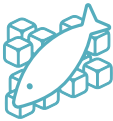
never put too much fish into one box



never drop or stand on fish, either on board or at the landing site



kill live fish as soon as they are brought into the boat



unload the fish quickly and carefully from the boat and keep it cool

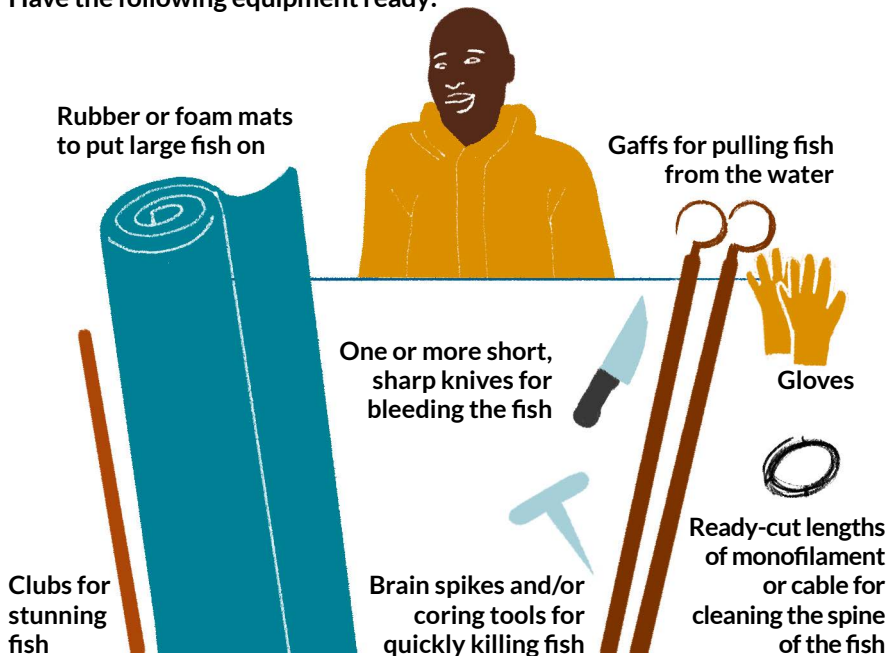


take fish out of the boat first before you take the fuel or anything else out



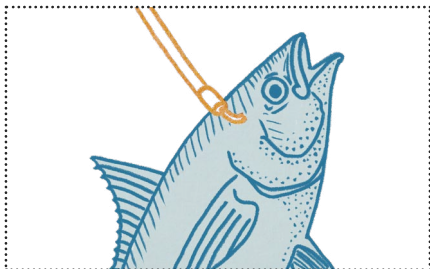
HANDLING LARGE FISH

Have the following equipment ready:

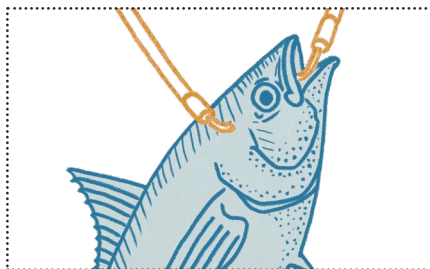


HAULING

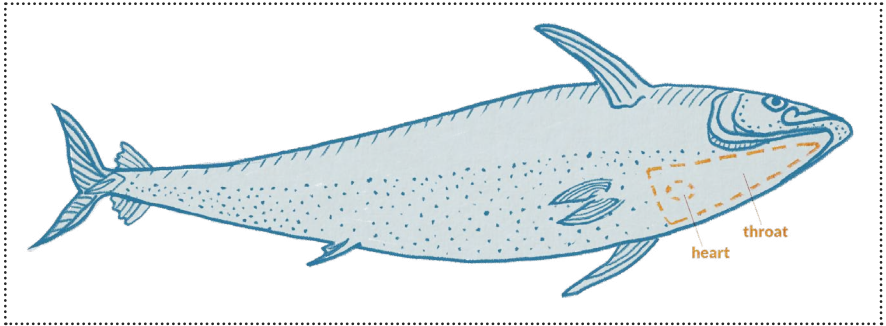
Each fish should be treated individually as it arrives at the boat.



Gaff fish in the top of the head. This makes handling easier and reduces damage to the fish flesh.



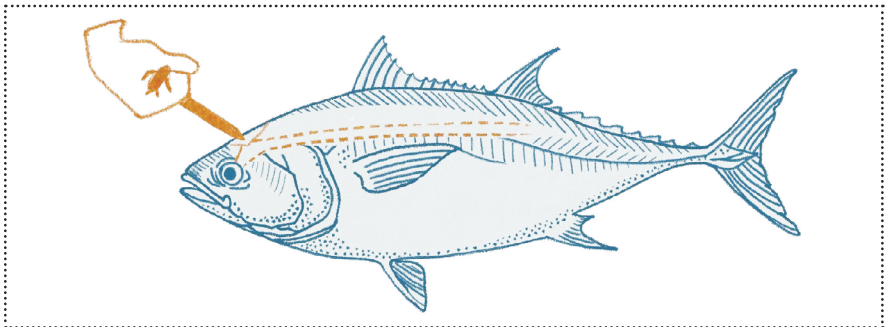
For very large fish, use two gaffs and two people: one gaff in the back of the head and the other gaff hooked through the mouth of the fish.



Do not damage the throat section of the fish, or stab the fish's heart during the gaffing process. The undamaged heart of the fish can pump blood and stress hormones out during bleeding.

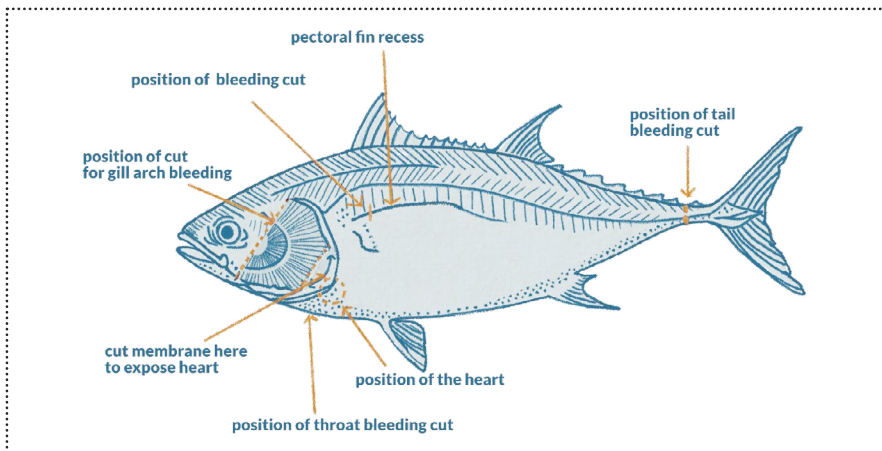
KILLING AND BLEEDING

The fish should be quickly killed by inserting a spike into its brain, and only stunned with a club if this is required for safe handling. It is better to spike the brain without clubbing, because stunning with a club can cause the body to vibrate uncontrollably. This generates heat within the muscle fibres of a fish, which can reduce flesh quality and value.



Quick killing will reduce stress, the potential for the struggling fish to bruise or damage itself, and increase the potential value of the fish at sale. Correct spicing of the brain should make the fish immediately stop moving, except for its mouth which typically falls open. Tunas should be bled as soon as possible to preserve the flesh quality and value. Not bleeding the fish properly will result in burnt flesh of lower value, and also reduce its storage life.

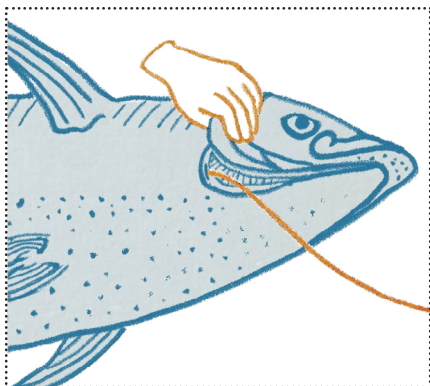
Take care of your catch. A guide to fish handling on board small boats



A cut to the throat is a simple and quick way to bleed a big fish.

Another way is to make small cuts into the pectoral fin recesses on both sides of the fish. There is no need to cut more than 2 cm deep as anything deeper will damage the valuable flesh.

A running seawater hose is then quickly put between the body and gills to help expel the blood. The seawater pipe should have enough pressure and continue flowing until the water leaving the fish runs clear, to indicate enough blood has run out of the body.



If your boat doesn't have a seawater pump that can help with bleeding the fish, you can tie a slip knot around the base of the fish's tail with some rope and drag the fish behind the boat until you can no longer see blood coming out of the cuts.

A section of cable or thick monofilament line should then be inserted down, and rubbed in and out of, the fish's spine. This will stop muscle twitches that can occur deep inside the fish's body after death, causing the flesh to heat up, even if the fisher cannot see any outside movements.

KNOWING WHERE THE FISH COMES FROM

Some fish buyers need to know who caught the fish, where it was caught and where it was landed. They need to know this information because if there is a problem with the fish, they can work out why the fish had a problem and try to prevent the same problem happening again. This is called “traceability”.

Illegal, unreported and unregulated (IUU) fishing is a big problem all over the world. It causes too much fish to be caught and not enough being left in the sea to grow.

A catch certificate helps with traceability and the control of IUU fishing. It is used so that everyone knows where the fish is from and that it has been caught properly. The person buying the fish or the boat owner can fill in the catch certificate.

Fill in the catch certificate after fishing

Catch certificates are needed to export fish



FISH AND FISH PRODUCTS EXPORT CATCH CERTIFICATE					
Certificate Number: _____					
1. VALIDATING AUTHORITY					
Name: _____			Address: _____		
Tel: _____		Fac: _____		Email: _____	
2. FISHING VESSEL					
Name	Port Reg. No	Call Sign	IMO/Lloyd No	Licence No	Inmarsat No
Vessel Master: _____			Signature: _____		
3. EXPORT DETAILS					
Name: _____			Address: _____		
Tel: _____			Email: _____		
Flight Name/ No: _____		Prime Comm	Vessel Name: _____		
Port of Departure: _____			Passport /ID No: _____		
Destination Port: _____			Signature: _____		
4. IMPORTER (Overseas)					
Name: _____			Address: _____		
Tel: _____			_____		

CHECKS YOU CAN DO

To help you land good quality and safe fish here is a reminder of some of the things to do before, during and after fishing. If you can answer yes to all these things then your fish will be good quality and safe for the consumer to eat:

BEFORE YOU GO FISHING

- Is the boat and all equipment clean?
- Is the fuel in a place where it cannot get to the fish?
- Are you wearing clean clothes?
- Have you washed your hands?
- Do you have enough ice?

DURING FISHING

- Did you fish in an area of clean water, and with no red water?
- Was the fish kept away from fuel and bilge water?
- Has the fish been iced quickly, and using 1 kg of ice for 1 kg of fish and good icing practice?
- Have any fish that are not iced been kept cool and out of the sun for less than five hours?

AFTER FISHING

- Have you unloaded the fish first and quickly?
- Are the fish boxes clean?

If you answer yes to all these things, then you are going to land good quality fish for a good price!

TAKE CARE OF YOUR CATCH

A guide to fish handling on board small boats

Fresh fish is an important source of food and income. Its quality is affected by handling and hygiene practices at all stages of the value chain – from production to consumption, starting with fishing. What happens to fish after it is caught has a big impact on its quality. Good handling and hygiene practices must be used on board the fishing vessel.

This guide is for fishers, vessel owners, extension services and anyone interested in how to maintain fish quality. The guide describes good handling and hygiene practices that will help fishers maximize the value of, and income from, fish. It will help fishers meet required standards and access new and high-value markets.

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