



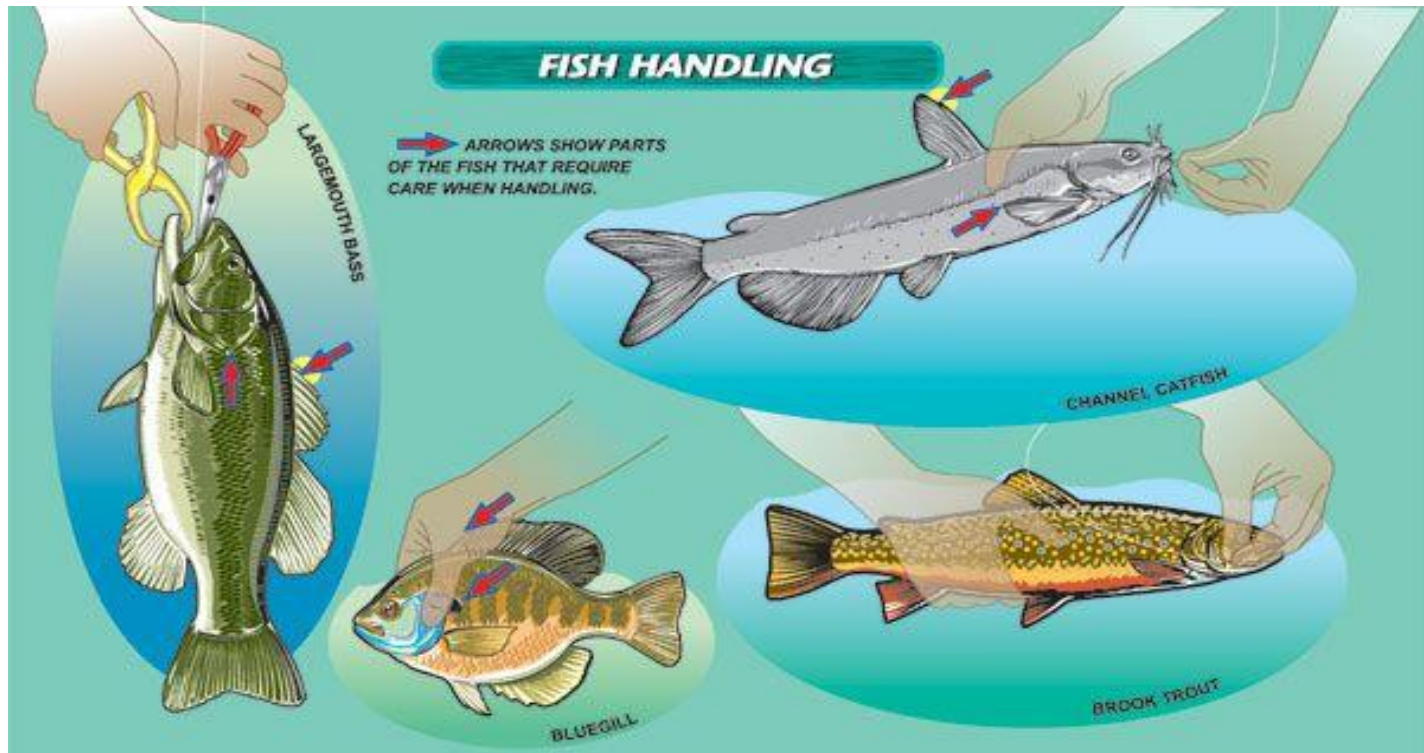
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# Handling of fish, bivalves, prawns, molluscs

# Handling of fish on-board



## **Introduction**

- Fish - perishable commodity. Various changes takes place in the fish the moment it is taken out from water leading to spoilage.
- Spoilage - action of bacteria, enzymes as also due to autoxidation of the fat.
- The type of flora and the extent of contamination with the will depend on
  - The bacterial quality of the waters and also
  - The sanitary conditions under which it is handled and preserved onboard.

## **Need for hygienic handling**

- Fish or any process product reach the consumer in highly acceptable condition. And it is more important if the fish is intended to further processing – the quality and acceptability of the end product depend on quality of raw material.

# HANDLING WET FISH AT SEA

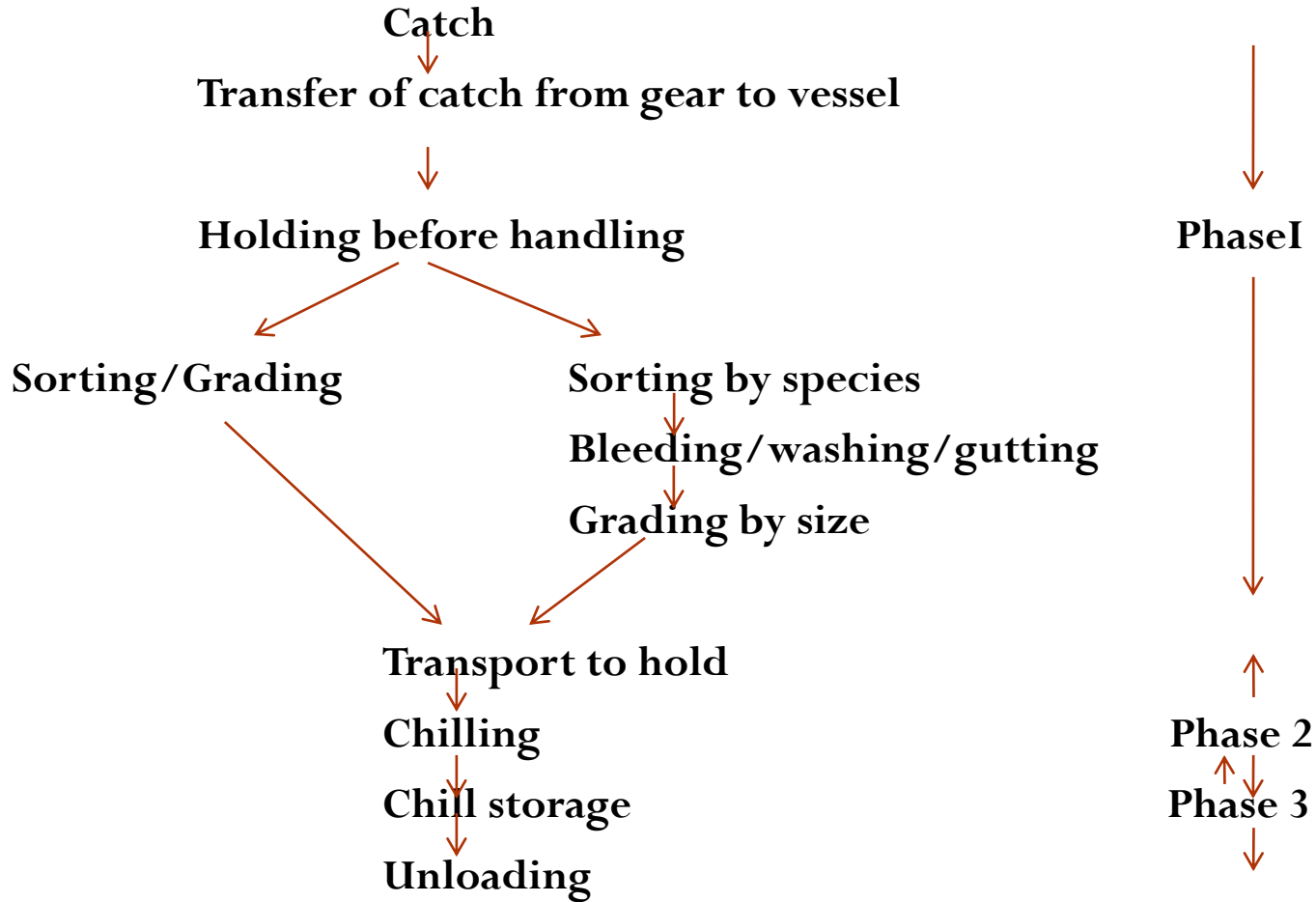
- The length of voyage of fishing vessels storing the catch in ice may range from a few hours for small inshore vessels to about three weeks for the largest distant water trawlers.
- White fish, that is those species in which most of the fat is in the liver and the flesh is lean, are handled in much the same way on all sizes of vessel.
- The catch is released from the net on to the deck, gutted immediately, washed, and stowed with ice in boxes or compartments below deck.

# Handling of fish onboard

The main factors affecting the quality of fish onboard are-

- Cleanliness of the deck and fish holds
- Quality and quantity of water used
- Temperature at which fish is maintained
- The general handling practices adopted
- Cleanliness of the equipment and utensils use in handling, packaging and storage.
- Personal hygiene of the fish handlers.

# Typical unit operation in Catch handling of fish



- Good handling practices at sea should ensure that the fish retains its natural freshness to the max. possible extent.

## **Washing**

- Immediately after unloading the catch – washed well to remove the dirt and other extraneous matter.
- Sea water, when taken away from shore- sufficiently clean and low bacterial load – quite good for washing.
- Water from near shore – contaminated with bacteria, industrial effluents and even faecal matters.
- Even when taken from distant open sea, water may be chlorinated to 10 ppm available chlorine level to make it safe for use.
- Washing- cleanses the most of the surface bacteria – which can bring early spoilage of fish.

## Sorting

- Depending on the gear employed.
- In pelagic catch consist mostly in the single species, but in trawl catch – several species and varying sizes, small to big.
- After washing, the fish must be sorted species wise as also size wise.
- Fish which are unfit for preservation and other damaged fish shall be separated and thrown back to sea or probable conversion into fish meal.
- High value fish are generally carefully sorted out and suitably preserved.
- Sorted species stored in a separate container size wise and species wise.



## Evisceration and removal of gills


- Gills and viscera of the fish are removed before they are preserved and stored.
- Evisceration should be complete with no portion of it left out.
- During evisceration no cut or bruise should be inflicted in the belly.
- Retention of visceral parts can easily contaminate the soft belly or bruise can cause accelerate spoilage.
- Removal of viscera and gills and bleeding should be done separately without contaminating other fishes.
- After each operation – washed thoroughly.


# Bleeding

- Desirable step before preservation
- If not thoroughly bleed , blood can clot and turn dark brown affecting the colour and appearance of meat.
- Bleeding is not possible for all the fishes – therefore restricted to only reasonably large fish like tuna, seer fish etc.
- Bleeding is done by slitting the throat of the fish followed by immersion in cold water for 30 minutes.
- Slitting the throat followed by hanging the fish by its tail also is practiced.

# Handling of bivalves



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- ❖ Depuration (purification) is a technique applied in many parts of the world for the removal of microbial contaminants from light to moderately contaminated bivalve molluscan shellfish.
  - ❖ By placing them in tanks of clean seawater such that they undertake their normal pumping activity for a period of time that may range from several hours to days.

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- Many of the pathogens, such as viruses causing gastroenteritis and infectious hepatitis, and the bacteria causing typhoid, are usually associated with contamination by human sewage.
  - Others, such as the bacteria causing gastroenteritis (non-Typhi *Salmonellae* and *Campylobacter*), may be associated with either sewage or with animal faeces.
  - The latter may contaminate shellfish-growing areas when washed off the land during periods of rain.

# The principle factors affecting the effectiveness of depuration are

- the design of the system itself,
- quality of the seawater used in it,
- the way that the system and allied processes are operated and
- the provision of the right physiological conditions for the shellfish for a sufficient length of time.





# Handling shellfish

- The shellfish industry, although only a small part of the fish industry as a whole, has grown considerably in recent years, and the products are generally high value ones.
- The principal species in order of importance are Norway lobster or scampi, lobster, scallop, crab, cockle, crawfish and oyster.
- Mussels and shrimp make only small contributions to British landings at the present time, but their fisheries are capable of considerable expansion.





# Handling shellfish

- Lobsters are still distributed live inland; the few that are processed are normally cooked and then frozen whole.
- Crabs, which do not travel well, are processed close to the points of landing.
- They are boiled whole, and the meats are then extracted from body and claws by hand.
- The white and brown meats are frozen separately and then wrapped and cold stored.
- A small amount of crab meat is also canned in Britain, and small amounts of cooked whole crabs are distributed chilled to retailers.



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# Handling shellfish

- Shrimps are cooked and peeled soon after catching, and the meats distributed either chilled, frozen or potted in butter; alternatively the whole raw shrimp are iced and then frozen for subsequent processing.





# Summary