

MASTER FISHMONGER STANDARD **■**

Fulfilment of this workbook should help you with build upon your existing knowledge of the following:

- Fisheries
- Aquaculture
- · Fish and Shellfish Knowledge
- · Preparation and Knife Skills
- Imports, Exports and Domestic Landings
- Customer Service
- Handling and Processing
- Retail & Display
- Quality Assessment & HACCP
- Nutrition
- Recipes / Cooking

Unless stated, one mark will be allocated based on one true and relevant answer. For example, if there are three marks available then three relevant and correct statements or answers should be given to obtain the full marks available.

Research

Within this workbook you will find links to important learning resources that will help you to complete your answers. Please ensure that you take the time to read or watch them, and reference them when possible to ensure that your marker understands where you have obtained your information from.

Good luck!

Acknowledgements

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Fisheries

LEARNING RESOURCES

Watch:

The Business of Fishing

https://www.youtube.com/watch?v=7pOzP 29N3HI

Read:

'UK Seafood Industry: Dashboard 2016' http://www.seafish.org/media/publications/Dashboard_Screen.pdf

Fish and Season: Sustainable Fish http://fishandseason.com/seasons

Marine Conservation Society – buying seasonal fish

http://www.mcsuk.org/downloads/fisheries/BuyingFishInSeason.pdf

Harvesting Methods

http://www.seafoodwatch.org/oceanissues/fishing-and-farming-methods

The Seafood Guide: Responsible Sourcing and The UK Seafood Industry – An Overview

The Seafish Guide to Responsible and Sustainable Sourcing

http://www.seafish.org/media/publications/Seafish_Resp_sourcing_and_sustainabilit_09_08_2016.pdf

The Seafish Guide to Illegal, Unreported and Unregulated (IUU) Fishing

http://www.seafish.org/media/publications/SeafishGuidetoIUU07-2016.pdf



The Business of Fishing

1. Using the online resource: 'UK Seafood Industry: Dashboard 2016', describe the total number of fishermen employed (full and part time) in England, N. Ireland, Scotland and Wales? (2 marks) What is the total number of full-time and part-time fishermen employed in the UK? (2 marks) (Total: 4 marks)

Scotland – 4,928 England – 5,569 Wales – 851 Northern Ireland – 859

Watch 'The Business of Fishing' then answer the following questions:

2. What are the four main costs associated with purchasing your own fishing vessel? (3 marks)

Gear equipment, purchasing the vessel, buying quota, licences, and upgrading gears

3. What are the four main costs associated with operating a fishing vessel? (2 marks)

Fuel, quotas, landing dues, labour, and food insurance

4. Name four reasons why more young people are not getting into the fishing industry? (2 marks)

The boat and gear are very expensive and obtaining financial support from banks is very difficult as most banks want 100% guarantees, opportunities are limited, working hours/ conditions, dangerous work, perception of the Industry, and it is a way of life rather than just a job.

5. Name six challenges associated with being a fisher? (3 marks)

Long working hours, days away at sea, unreliable catches and having to switch between species, vulnerable to the weather, unpredictable revenue, full time job even when the fishers are on land, achieving best prices for the catch, recruiting and retaining crew, current quotas and fisheries management can be too rigid and unresponsive to regional abundance of fish species.

Sustainable Fisheries

1. Seafood seasonality refers to the natural variation in the quality of fish which are part of a natural breeding cycle. Sustainable fisheries will identify 'peak' season when the mature fish are best quality to eat out of breeding (spawning) condition and 'out of season' when the species are spawning. Explain two benefits and two challenges of purchasing seafood during 'low' and 'peak' season. (4 marks)

Advantages

- 1. The quality of the fish should be at its best during 'peak season'.
- 2. Selling seafood during the 'peak season' supports sustainability efforts as it encourages consumers to purchase seafood out of the breeding season.
- 3. Selling fresh fish based on their 'peak season' provides an opportunity to promote other fish species.
- 4. Purchasing seafood during the peak season allows the fish to be frozen at the peak of their annual quality, which means that customers can use the fish in the same way as out of season and the quality will be maintained.
- 5. Purchasing seafood during the peak season provides an opportunity to engage with customers, offer expertise and a high level of service, and show an environmentally aware business approach.

Disadvantages

- Customers often want the same species year-round, meaning the supply of local fish
 will, if available out of season, be of poorer quality, have high quantities of roe, or
 need to come from frozen stocks.
- 2. Prices are higher when the quality is better.
- 3. If sourcing from other sources, it is possible that the seafood will be more expensive, have travelled further and will be less fresh.
- 4. There are also misconceptions against the sustainability of the fishery if fishing out of season.

2. Name four harvesting methods generally regarded as more selective and environmentally responsible? (2 marks)

- Traps and pots
- 2. Handlines
- 3. Rod and line
- 4. Hand diving
- 5. Long lines
- 6. Static nets of appropriate mesh sizes such as gill/tangle nets

Sustainable Fisheries

3. Can you name four major reasons why overfishing has occurred in the last fifty years? (4 marks)

- 1. Improved gear efficiency (i.e. able to fish more, more efficiently)
- Improved vessel advancements (i.e. able to spend a longer time at sea, freeze/ chill fish on board, increased effort)
- 3. Little to no fisheries management plans
- 4. Lack of understanding about wild fish stocks (belief that the seas were inexhaustible)
- Little to no scientific data
- 6. Lack of enforcement
- 7. Expansion of territorial waters to 200 miles e.g. cod wars with Iceland forcing EU fleets to fish in own waters

4. Describe three measures which can be taken by a consumer to support 'sustainable fisheries and aquaculture'? (3 marks)

- Research seasons, fish stocks and best practices in harvesting techniques using
 resources such as the Sourcing Seafood Risk Assessment, and/or ask your local
 fishmonger to explain where your fish and shellfish has come from and the harvesting
 method used
- 2. Buy certified sustainable fish /shellfish
- 3. Check seafood guides
- 4. Buy seafood from reputable sources
- 5. Eat a wide selection sustainable fish and shellfish trying to avoid the big sellers helping to generate a profitable market for less well-known species.

5. Name four problems with buying and selling illegally caught fish and shellfish? (4 marks)

Illegal fisheries:

- 1. undermine the work of fisheries scientists, conservationists, and fisheries that work hard at managing fish stocks in a sustainable manner.
- 2. may use banned methods of fishing that damages the wider environment and have high levels of by-catch also they may exploit the fishermen who do the work.
- 3. make it impossible to understand fisheries science and calculate accurate quotas and management plans.
- 4. allows products to make a profit that shouldn't be on the market (i.e. undersized fish, non-quota species, endangered stocks.)

Gear & Equipment

LEARNING RESOURCES

Watch:

Beam Trawl Selectivity:

https://www.youtube.com/watch? v=COeEq_yQO1c

Read:

Fishing UK: past, present and future

www.seafish.org/media/Publicatio ns/UKFishing_PastPresentFuture.p df

Harvesting Methods

http://www.seafoodwatch.org/oce an-issues/fishing-and-farmingmethods

Marine Conservation Society - how fish are caught

http://www.mcsuk.org/downloads/fisheries/Fishing_Methods.pdf



Gear & Equipment

1. Describe three types of passive fishing gears. (3 marks)

- 1. **Gill nets:** walls of netting set at or below the surface, on the seabed or at any depth in between.
- **2. Trammel nets**: wall of nets divided into three layers, an inner fine mesh net is sandwiched between two outer larger meshed nets.
- 3. Tangle nets: are similar to gill nets, but are slacker, shorter and have less floatation
- **4. Long-lining**: a long line (up to 100 km long) set vertically in the water column or horizontally along the bottom. The lines have bait and hooks attached, which will vary depending on what species is being targeted.
- 5. Pole and line: using a rod off a boat or port and involves the use of bait
- 6. Jigging: used to catch squid using a light and line.
- **7. Pots and traps:** pots and traps will be anchored at sea, there will be a trap door used for undersized or non-target species.
- **8. Fish attraction devices:** using floating or suspended structures to congregate fish together.

2. Describe three types of active fishing gears. (3 marks)

Active gears refer to gears such as towed gears, trawls and dredges.

3. What are the advantages and disadvantages of active fishing gears? (4 marks)

Benefits

Active gears can be very efficient at catching large quantities of fish/shellfish over a large area.

Active gears can be designed to fish at different depths from the sea bed to the surface waters so are able to chase and often concentrate fish.

Active gears can catch a wide range of demersal and pelagic species.

Challenges

Active gears, such as demersal beam trawling in a mixed fishery, can catch large volumes and varieties of non-target creatures and can impact the physical habitat. Pelagic purse seines can also catch predator species such as marine mammals, orca/dolphin. Active gears can also catch high number of species, causing overfishing if it is not suitably managed.

Gear & Equipment

4. What is bycatch (1 mark), why is it a problem for conservation and fisheries (2 marks) and what changes are being put in place to prevent it? (3 marks) (Total: 6 marks)

Bycatch is when non-target species are caught.

Bycatch can result in edible commercial fish being discarded because they are under the minimum landing size or because the vessel is not allowed to land it (i.e. no quotas).

Bycatch can also be discarded because it a non-commercial or low-value species. As bycatch are often dead or have a low survival rate, the bycatch reduces wild stocks for no financial or social gain.

The Common Fisheries Policy previously encouraged discarding bycatch, but new legislation will enforce the landing of all species subject to TAC limits and Minimum Conservation Reference Sizes by the year 2019.

The use of more selective fishing gears (technical measures e.g. square mesh panel) to minimise by-catch is also actively encouraged.

Promotion of less well-known species help to create a market value for previously discarded fish.

5. Name the main types of fishing methods used to harvest the following species:

Species	Fishing Method
Mussel	e.g. Rope grown or seabed
Mackerel	e.g. Purse Seine / Hand Line
Haddock	Gillnets, otter trawl, seine
Cod	Otter trawl, handlines, pots and traps, longlines, gillnets
Cockles	Hand dredging, suction dredge, hand raking
Black bream	Pair trawl, otter trawl static nets and rod and line
Salmon	Beach seines, purse seines, set and drift gillnets
European Seabass	Drift nets, set gillnets, handlines, otter trawl, pelagic pair trawl, handlines and rod & line
Brown Crab	Pots and traps, pots and creels, tangle nets
Anglerfish	Beam trawl, otter trawl, gillnets, tangle nets
Queen Scallops	Light demersal trawls
Tuna	Purse seine, gillnet, pole and line, longline, troll, pelagic trawl



Aquaculture

LEARNING RESOURCES

Watch:

Shellfish!

https://www.youtube.com/watch?v=AN5OZn7M318

Harvesting Methods

http://www.seafoodwatch.org/oce an-issues/fishing-and-farmingmethods

FAO: Why Aquaculture?

http://www.fao.org/docrep/t8598 e/t8598e03.htm

FAO: State of the World Fisheries: Aquaculture

http://www.fao.org/3/a-i5555e.pdf

Marine Conservation Society - how fish are caught

http://www.mcsuk.org/downloads/fisheries/Fishing_Methods.pdf



Aquaculture

Watch the Seafish' 'Shellfish!' video then answer the questions 1 - 3jh:

1. Name four bivalve species harvested in the UK (2 marks) and the five aquaculture techniques used. (3 marks) (Total: 5 marks)

Oysters, mussels, scallops and clams. Cultivation, hatchery, bag/racks, re-laying systems and stock management techniques.

2. What the four main benefits of shellfish production in the UK? (4 marks)

- 1. Production goes on year-round (harvest is seasonal from different locations)
- 2. Good growth rates (does depend on water temperature/ quality/ available natural food)
- 3. A healthy shellfish cultivation industry is an assurance of high environmental quality
- 4. Can be produced/ harvested in a very sustainable way.

3. Where can shellfish spat be harvested from? (4 marks)

'Spat or seed' are taken from one of three sources: water of estuaries or the open sea, whilst they are still pelagic larvae by using material, known as collectors.

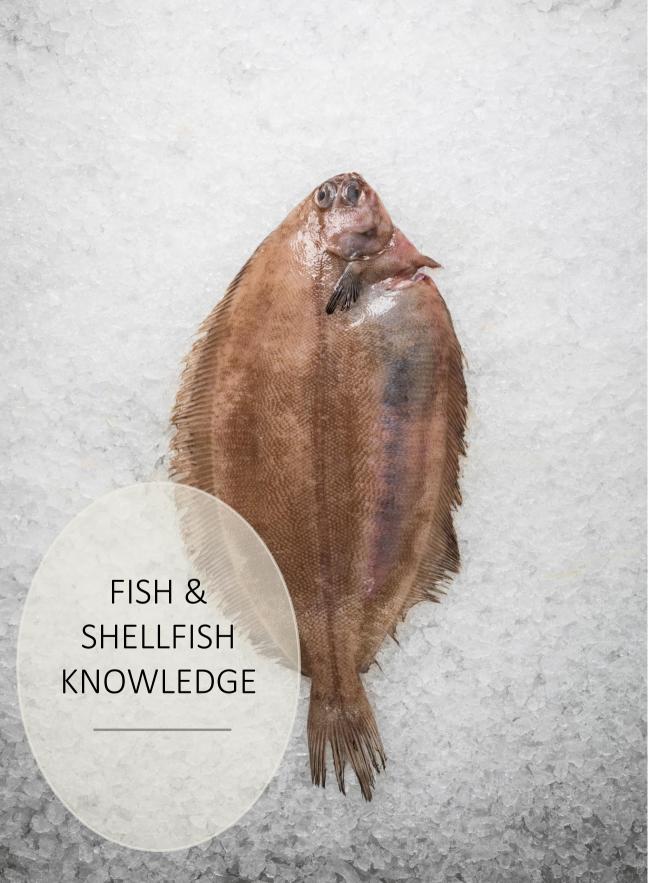
Alternatively, dredges harvest natural collections of shellfish seed once they have settled to the sea bed and relocate them to sheltered locations. Hatcheries can also produce spat from brood stock.

4. What is organic aquaculture? What are two advantages and two disadvantages of this type of fish farming? (6 marks)

Organic aquaculture is a holistic method for farming marine species in line with organic principles. The ideals of this practice establish sustainable marine environments with consideration for naturally occurring ecosystems, use of pesticides, and the treatment of aquatic life.

5. Using the Seafood Guide, describe how aquaculture falls into three broad areas. Briefly describe the processes involved in each area and provide an example of a farmed species for each area. (6 marks)

- 1. Farming the whole process is done in captivity (example species: trout, salmon)
- 2. Sea rearing where young stocks are caught from the wild then harvested (example species: eels, mussels, tuna)
- 3. Sea ranching juveniles are bred in captivity, then released into the wild to increase stock (example species: lobster National Lobster Hatchery)



Fish & Shellfish Knowledge

LEARNING RESOURCES

Read:

The Seafood Guide: Species and Availability / Species Availability

Fishbase: Marine science web site with access to pictures and names of fish from around the world http://www.fishbase.org/search.ph p

M&J Seafood – The fish book http://www.mjseafood.com/the-fish-book

Pelagic Fisheries

https://oceanservice.noaa.gov/fact s/pelagic.html

Deepwater species

http://www.gov.scot/Topics/marin e/marineenvironment/species/fish/deepwat er

Commercial names of fish

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/236702/pb14027-uk-commercial-designation-fish-list.pdf



Fish & Shellfish Knowledge

1. What is a pelagic fish species? What are the characteristics of these fish species? (2 marks)

Pelagic fish swim freely in the water column, often forming dense shoals. They often occupy open waters between the coast and the edge of the continental shelf in depth of 20-400 metres.

2. What is a demersal fish species? What are the characteristics of these fish species? (2 marks)

Demersal fish live and feed close to the seabed. Some do shoal but many do not.

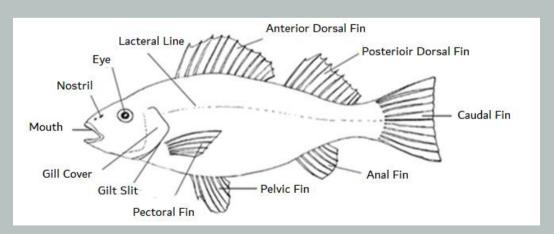
3. What are the characteristics of a benthic species? (1 marks)

Benthic species, include many shellfish, live on or in the seabed.

4. What is the definition of a deep-sea fish? What characteristics do deep-sea fish have that make them vulnerable to overfishing? (2 marks)

Deep-water fisheries are defined as those that occur at depths of more than 400 metres. Scottish deep-water fisheries tend to exploit fish at depths of between 500 and 1,500 metres.

5. Complete the fish diagram with the names of each body part. (6 marks)





Preparation & Knife Skills

LEARNING RESOURCES

Watch:

Seafish Training Fish Preparation Masterclass Series

https://www.youtube.com/playlist?list=PLjmL1 YNydu1EE0yahhu-me_xy3Mp2U6RP

Read:

The Seafish Guide

Cuts and portions
Direct Seafoods – fish cuts

http://www.directseafoods.co.uk/fish-seafood/preparation

M&J Seafood - Cuts and portions

http://www.mjseafood.com/fishipedia-seafood-guide/buying-storing-and-cooking/cuts-and-portions/



Preparation & Knife Skills

1. Using the Seafood Guide, complete the following table: (20 marks)

Cuts	Describe the cut, it's benefits and provide an example of a species that can be cut using this technique.
	Large round fish and large game fish; cod, hake, tuna, marlin, mahi mahi
Loins	Typical the thickest section of the fillet with the largest muscle blocks/ flakes
	Portion size flatfish; plaice, lemon sole, megrim, witch, dab, flounder
Pocketed fish	Allows fish to be stuffed with ingredients
	Small to medium size flatfish; plaice, lemon sole, turbot, brill, chick halibut
	This is usually used on medium to larger flat fish, creating portion sizes.
Quarter-cut	Can be easier that cross-cut fillet (usually how a chef would learn)
	Large round fish: salmon, cod, hake, monkfish
Steaks	Little loss of yield, can retain more flavour and moisture during cooking
(darnes)	however the bone must me be removed before eating Large flat fish; halibut, turbot, brill
Steaks (troncons)	Little loss of yield, can retain more flavour and moisture during cooking however the bone must me be removed before eating
(troncons)	Small to portion size round fish; sardine, herring, trout, sea bass, mackerel, red
Butterfly	mullet
fillet	Gets a single portion using two fillets joined together
	Large flatfish; Halibut, turbot, brill,
	Square or rectangular portions of typically a flat fish but can also be taken for
Paves	the tail section of large round fish fillets.
	Large roundfish and flat fish fillets, loins of large game fish; salmon, cod halibut turbot, snapper, barracuda, barramundi, tuna, marlin, mahi mahi,
Supremes	kingfish, also known as fillet portions (well trimmed)
	Fillets of large fish; salmon, halibut
	Skinned thin fillet portion cut on the angle to give good plate coverage, cooks
Escalopes	very quickly
	Portion size round fish; trout, sea bass, sea bream
6 611 4	Used on whole un-gutted fish. Fish cut down back and backbone and guts
Canoe fillets	removed creating a 'canoe' shape, ideal for stuffing



Imports, Exports and Domestic Landings

LEARNING RESOURCES

Read:

The Seafood Guide: The UK Seafood Industry – An Overview

'UK Seafood Industry: Dashboard 2016'

http://www.seafish.org/media/publications/Dashboard_Screen.pdf

UK Sea Fisheries Statistics

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/647482/UK_Sea_Fisheries_Statistics_2016_Full_report.pdf



Imports, Exports and Domestic Landings

 Using the 'UK Seafood Industry Dashboard' name the largest UK ports (in terms of volume of seafood) in 2016. (2 marks)

Peterhead, Plymouth, Fraserburgh, Lerwick

2. Using the UK Sea Fisheries Statistics, name the top five domestically landed species by UK vessels (by volume) in 2016 (2 marks)

By volume, it is mackerel, herring, haddock, blue whiting and crabs

3. Using the UK Sea Fisheries Statistics, name the top five domestically landed species by UK vessels (by value) (2 marks)

Mackerel, scallops, herring, haddock, nephrops

4. Using the Seafood Guide, name the top five imported species by volume into the UK. (2 marks)

Tuna, shrimp, cod, salmon, haddock

5. Using the Seafood Guide, what are the four main countries the UK exports seafood to? (2 marks)

Netherlands, France, Spain and Germany

- 6. Why is transparency and traceability important when buying seafood? (3 marks)
- 1. If you can trace something from a transparent supply chain, then you can be more confident of the provenance of the product
- 2. that the product was caught using legal harvesting methods and in compliance with fisheries management, and
- 3. that the supply chain has maintained the transparency and traceability standards.
- 7. Describe what is meant by an underutilised fish species? (1 mark)

Underutilised species refers to edible species that are available but are not commercially popular.



Customer Service

LEARNING RESOURCES

Read:

What defines good customer service in retail?

https://www.highspeedtraining.co.uk/hub/good-customer-service-retail/

Food Labelling guide for fishmongers

http://www3.hants.gov.uk/tradingstan dards/tradingstandards-business/ts-business-food/tsguide-labelling-fishmongers.htm

Marine Conservation Society – Fish to eat and fish to avoid

http://www.mcsuk.org/downloads/fish eries/fishweek/FishWeek_FishList_Jan 2011.pdf

Marine Conservation Society – Good Fish Guide

http://www.goodfishguide.org/

Marine Conservation Society – buying seasonal fish

http://www.mcsuk.org/downloads/fisheries/BuyingFishInSeason.pdf

Direct Seafoods - What's in Season

http://www.directseafoods.co.uk/fish-seafood/what-s-in-season

NHS Advice on how much fish to eat

http://www.nhs.uk/Livewell/Goodfood/Pages/fish-shellfish.aspx#much2

NHS - Fish & Shellfish in your diet

http://www.nhs.uk/Livewell/Goodfood/Pages/fish-shellfish.aspx



Customer Service

1. Describe four major impacts of poor customer service on a seafood business. (2 marks)

- 1. Customers not returning to your place of work
- 2. Bad publicity for your business
- 3. Complaints to your manager
- 4. Low of revenue for your place of work
- 5. Less job security (if the business is doing badly because of the poor customer service)
- 6. Lost sales / Lost opportunity for upselling, adding value to sales.

2. Describe the steps taken to open, conduct and close a sale. (2 marks)

- 1. Greet the customer, find out what their needs are look for upselling opportunities/adding value
- 2. Confirm requirements and how they would like products prepared
- 3. Prepare the product to their specification
- 4. Share promotions, cooking / prep suggestions, storage tips
- 5. Wrap up the products carefully to minimise damage and preserve quality
- 6. Take payment
- 7. Say goodbyes and thank them for their custom and welcome return visit

3. When serving a customer what information <u>could</u> you provide about the product? (4 marks)

- 1. Common name
- 2. production method,
- 3. Type of fishing gear used
- 4. If the fish has been defrosted
- 5. date of minimum durability
- 6. use by dates
- 7. landing location and date,
- 8. vessel / fisher information, and
- 9. health benefits.

For fresh products on the counter it would be best to advise the customer about storing the seafood, for example fresh products should be covered in the fridge for use on the day of purchase or the next day or freeze using proper freezer bags on the day of purchase and use within one month for best quality, preparation techniques / cooking suggestions, storage tips, and if available and the customer wants to know:.

Customer Service

4. Why is it important to sell fish and shellfish that is of a high quality? (2 marks) What are the impacts on the industry of selling poor quality products? (1 mark) (Total: 3 marks)

- Selling poor quality seafood damages the entire seafood industry, as customer
 may be turned off purchasing or eating seafood after a bad experience.
- 2. There are food safety risks, it's potentially very dangerous selling poor quality products!
- 3. Selling high quality products builds a customer base for your business, as well as the industry as a whole.

5. State the importance of accuracy during filleting and the issues associated with poor accuracy including the impact on customers. (4 marks)

- 1. Poor accuracy means that either the price per portion is higher for the customer, and /or the business loses out of money (as it goes in the bin).
- 2. Customer complaints for low yield
- 3. Losing business and profits with poor yield
- 4. Increased waste/ cost of disposal with low yields



Handling & Processing

LEARNING RESOURCES

Watch:
Seafish: The Business of
Processing
https://www.youtube.com/watch?

v=GPaorAYnFqY

Read:

The Seafood Guide: Seafood Processing / Processing and Techniques

Seafood Processing Industry Report:

http://www.seafish.org/media/pub lications/2014_Seafood_Processin g_Industry_Report.pdf

Food Labelling guide for fishmongers

http://www3.hants.gov.uk/trading standards/tradingstandardsbusiness/ts-businessfood/tsguide-labellingfishmongers.htm



Handling & Processing

Using the Seafood guide, describe what is meant by primary processing? (1 mark)

The first stages of preparing seafood for sale (i.e. heading, gutting, cutting, filleting, peeling, freezing etc) is primary processing.

2. Using the Seafood guide, describe what is meant by secondary processing? (1 mark)

Adding value to a product by creating prepared product, such as smoking, canning, battered, or frozen.

3. List all the personal protective equipment needed when hand filleting. (2 marks)

Apron, hat, white coat, white trousers, cut resistant glove, beard/face mask, and non-slip protective boots.

4. List the tools and equipment needed for hand filleting. (2 marks)

Filleting knife, boning knife, steaking bone, sharpening steel/ chantry, tweezers, scaler

5. State food safety procedures to meet legal and regulatory requirements for filleting fish by hand. (6 marks)

- Hands must be washed on entering a fresh food environment and as required after risk of contamination
- Raw and cooked products must be kept separate and then disposed of properly so
 as not to re-enter the food chain and separately from non-food waste, knife and
 equipment must be in good, working order, the correct equipment should be used
 including colour coded chopping boards, the area of filleting must be clean.
- Food preparation areas should have a food safety management system in place (HACCP) with an integral cleaning schedule including how the filleting area/ tools should be cleaned and sanitised as required.
- 4. Staff should be suitably trained and the work carried out by competent staff.

Handling & Processing

6. When purchasing seafood, what are the legal labelling requirements that should be stated on the packaging. (6 marks)

- 1. The commercial designation (name)
- 2. The scientific name
- 3. The relevant geographical area
- 4. The production Method
- 5. Whether the products have been previously frozen or not
- 6. Declaration of additives



Retail & Display

LEARNING RESOURCES

Read:

Reference fish labelling Regulations 2013

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/245013/pb13760-fish-labelling-regs-guidance.pdf

Seafood Freshness Quality

http://www.seafish.org/media/pub lications/seafishfactsheet_seafoodf reshnessquality_201101.pdf

Seafish - Buying Seafood

http://www.seafish.org/eating-seafood/buying-seafood/buying-fresh

NHS – How to store food properly

http://www.nhs.uk/Livewell/home hygiene/Pages/how-to-storefood-safely.aspx



Retail & Display

1. What design features should a seafood counter have? (3 marks)

- 1. The counter should be easy to clean and sanitise
- 2. Allow for efficient use of ice and maintain temperature control of product
- 3. Should be easy to clearly ticket.

2. Describe how to set up a seafood display in compliance with food safety and labelling regulations. (6 marks)

- Ice machine/ ice store should be close to the counter and deliver ice in boxes/ bags that's not too heavy.
- 2. Do not take more stock out of temperature control than can be displayed on ice in twenty minutes.
- 3. Ensure products are not piled up high and top iced as required.
- 4. Ensure set up allows tickets to be easily seen by customer and have required coding information for the day.
- 5. Good set up requires a good close down and good communication between staff to ensure good stock rotation and quality is maximised.
- 6. Items should be stocked using the 'First in/ First out' principles.

3. Describe how to maintain a seafood display in compliance with food safety and labelling regulations. (3 marks)

- 1. Counter stock levels should be maintained at appropriate levels appropriate for the day and time of day (consolidate at quieter times).
- 2. The counter itself should be easy to maintain.
- 3. Any broken or damaged counter items should be thrown away as these could be harmful and be a source of contamination / hold bacteria.

Retail & Display

4. Describe how to dismantle a seafood display in compliance with food safety and labelling regulations. (4 marks)

- 1. Should be easy and not cause food safety risks.
- 2. Counter should be able to be cleaned as directed by the cleaning schedule.
- 3. Sales tickets should be easy to clean and sanitise and make changes as appropriate.
- 4. Items should be removed using the 'First in/ First out' principles.

5. When storing seafood overnight, what stock rotation and storage measures should be implemented? (3 marks)

- 1. Stock items should be stored carefully in overnight fridge storage appropriately, using 'First in/ First out' principles.
- Cooked/ ready to eat products separately at the top of the fridge, followed on the
 next shelf down by smoked fish fillets, then fish fillets with whole fish at the lower
 levels. The latter two can be iced if it is possible for melted ice to escape without
 causing a slip hazard.

6. Describe what type of seafood products need to be kept separate from one another, and the correct method to separate these products on a seafood display. (3 marks)

Smoked, cooked/prepared products and raw fish and shellfish should all be kept separate.

The use of baskets, trays, dividers and vegetation such as paisley or kelp can be used to separate products. It is important to remember that items used as dividers on the counter can potentially be a source of contamination. They should be sanitised prior and after use.

Ice species susceptible to developing histamines regularly and often, top ice whole fish, do not stack fillets and keep in direct ice contact, use plastic membrane to prevent direct ice contact with smoked fish, skinned fillets, tuna steaks.



Quality Assessment & HACCP

LEARNING RESOURCES

Quality Assessment

Watch:

Seafood Quality Assessment Systems (videos 1 – 4) https://www.youtube.com/watch?v=9No0yWcQ78w&list=PLjmL1YNydu1EKxilnxGWrJMaB_5Gw9o2u

Seafish Training: Health and Safety

https://www.youtube.com/watch?v=fzPbxBqfFis&list= PLjmL1YNydu1GzUti-rmjNtdjFbaXI5FTP

Read:

Seafood Freshness Quality

http://www.seafish.org/media/publications/seafishfact sheet_seafoodfreshnessquality_201101.pdf

Seafish – Buying Seafood

http://www.seafish.org/eating-seafood/buying-seafood/buying-fresh

Seafish Sensory Assessment Scoresheets

http://www.seafish.org/media/Publications/sensory_a ssessment_scoresheets_14_5_10.pdf

HACCP

Watch:

Seafish Training: Hygiene in the Seafood Industry

https://www.youtube.com/watch?v=ZeBoQN4azxQ&list=PLjmL1YNydu1Gu6iNTYbdf05LAPE_JNN2I

Read:

An Introduction to Hazard Analysis Critical Control Point

http://seafoodacademy.org/pdfs/haccp-olm-segment.pdf



Quality Assessment & HACCP

1. Describe the three stages of freshness. (3 marks)

Fresh (in rigor mortis to point of acceptability regarding taste)

Fish will usually go through rigor 6-36 hours depending on temperature control and species. At this point the flesh of white fish can be tough and fibrous and too fresh to eat. This is the stage of freshness that fish should be sold. It depends on temperature control and should link to the display date if available

Point of acceptability regarding taste (safe to eat)

This is the point where the sweet flavours and firm flesh textures have deteriorated to the point where bland and mildly sour tastes/ soft textures make the product unpalatable but still safe to eat (depends on temperature control but links to use by dates)

Product unsafe to eat

Product is not edible and unsafe to eat; product should not be eaten or sold and safely disposed of.

2. Outline the main causes of fish/shellfish spoilage (2 marks)

Spoilage occurs as soon as the fish dies.

Enzymes and bacteria are the main causes of deterioration in seafood, however, autolysis (triggered by enzymes) and oxidation of natural fats and oils also play a part. Elevated temperatures and excessive/ careless handling will speed up the rate of deterioration.

3. Why might handling and temperature control impact fish/shellfish quality? (2 marks)

Careless handling can bruise flesh and break the connective tissues between muscle blocks and cause gaping in fish fillets. This reduces quality and potentially accelerates spoilage.

There is a direct link between shelf life and temperature control. For every 5°C rise in fish storage temperature, the shelf life more than halves.

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4. Why might the harvesting method impact fish/shellfish quality? (5 marks)

- Harvesting method will have a direct impact on the quality, not only will the gear have an impact but where this gear is used geographically (different gear is used in different areas) will impact on the time taken to get to market.
- 2. Hook and line will cause least damage to the catch.
- 3. Fixed nets may cause minimal damage as long as they do not have too long a soak time when scavengers like crab can impact quality.
- 4. Trawled gear can compress/ bruise catch in the cod end and cod end sensors are often used to minimise this.
- 5. Where huge potential catches are made in one time such as purse seine nets, the catch quality depends on how the catch is taken from the net to vessel (pumps often used) and the capacity of the refrigerated sea water tanks (temperature control).

Name the three main assessment schemes used to determine fish/shellfish quality?(3 marks)

- EU (EAB) Scheme
- QIM
- TORRY

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6. Using the Seafish Sensory Assessment Scoresheets, complete the following Assessment Recording Form at your place of work for one species: (14 marks) Species name: Date of intake into your place of work: Origin: Harvesting method: Raw or cooked: Texture / Effect of **Eyes** Skin **Rigor Mortis** Description Score (using **TORRY** or QIM) Flesh and Belly **Kidney and Blood** Gills: Flaps **Appearance and** Odour Description Score (using **TORRY** or QIM)

Quality Assessment

7. Name each species, describe the quality, and say whether you would stock this product in your store.





Nutrition

LEARNING RESOURCES

Read:

Fish a food

https://en.wikipedia.org/wiki/Fish_as_food

Seafish - Health benefits

http://www.seafish.org/eating-seafood/seafood-for-health/health-benefits

NHS - Fish & Shellfish in your diet http://www.nhs.uk/Livewell/Goodfood/ Pages/fish-shellfish.aspx

Scombrotoxin - Histamine

http://www.foodsafetywatch.org/factsheets/scombrotoxin-histamine/

NHS - Fish & Shellfish in your diet http://www.nhs.uk/Livewell/Goodfood/ Pages/fish-shellfish.aspx



Nutrition

1. Name three parts of the body that benefit from omega-3 fats? (1 mark)

Heart, brain and eyes.

2. What nutrients do fish provide? Give some examples using white fish, shellfish and oily fish. (4 marks)

All fish contain protein and most supply phosphorus, selenium and vitamin B12. Different varieties provide different vitamins and minerals, too – for example, white fish provide potassium and B vitamins; shellfish contain copper, zinc, iron and iodine; and oily fish contain vitamin D.

3. Name 8 varieties of oily fish (4 marks)

Mackerel, Sardines, Pilchards, Fresh Tuna, Salmon, Trout, Anchovies, Herring (bloater, kipper and hilsa are forms of herring), Jack (also known as scad, horse mackerel and trevally), Carp, Sprats, Whitebait.

4. What are the names of the two omega-3 fats found mainly in fish? (2 marks)

EPA (eicosapentanoic acid) and DHA (docosahexanoic acid)

5. If you sold fish cakes that contained cod, prawns, peas and mashed potato, dipped in egg and covered in breadcrumbs, which allergens would you need to declare by law. (2 marks)

Fish, crustaceans, egg and gluten.



Recipes & Cooking

LEARNING RESOURCES

Read:

Fish Easy

Mitch Tonks

Fish & Shellfish / Seafood Odyssey

Rick Stein

Leith's Fish Bible

Caroline Waldegrave & CJ Jackson

Fish

Mat Follas

Fresh Fish

Jennifer Trainer Thompson

200 Fab Fish Dishes

Gee Charman

Hook, Line and Sinker

Galton Blackiston

Fish Without a Doubt

Rick Moonen and Roy Finamore

Passion for Seafood

Gordon Ramsay

Simply Fish

Fishmongers' Company and Steve Pini



Recipes & Cooking

1. Describe the different ways in which you might cook a whole flat fish. (1 mark)

Baking, roasting, grill,

2. Describe what type of fish is suitable for the barbeque and how it should be prepared. (2 marks)

Small whole fish: bass, trout, tilapia, barramundi (on a rack as above)
Large whole fish: salmon, cod and haddock (wrapped in a double sheet of extra strong tin foil that is turned half way through cooking)
Shellfish: Raw shell-on prawns (shell prevents them from drying) Cuttlefish steaks.

The seafood needs to be marinated or wrapped in a double layer of foil to prevent it from drying and burning.

3. Describe the difference between shallow-frying, pan frying and deep frying. (3 marks)

Shallow-frying is usually done using vegetable oil (rape seed) as it can reach a high temperature without burning. Deep-frying requires a lot of oil, normally beef dripping or rape seed oil, and pan-frying can use oil or butter.

4. Suggest a preparation technique that someone could use if they were in a rush, but wanted something healthy. (4 marks)

Healthy and quick methods of cooking fish include steamed, grilled, en papilotte or even stir-fried if using a small amount of a healthier oil such as coconut butter.

5. Provide a recipe that a customer could prepare for a dinner party (6 marks)	

Useful Contacts

General Programme Enquiries

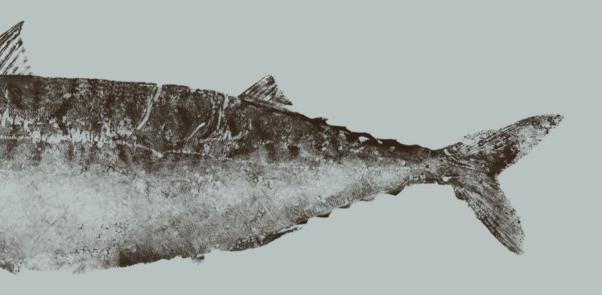
The Master Fishmonger Standard The Fishmongers' Company Fishmongers' Hall London Bridge London EC4R 9EL

www.masterfishmonger.co.uk MFS@FishHall.org.uk 020 7626 3531

MFS Preparation Course and Examination Enquiries

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