FISH FILLETING TRAINING PROGRAMME

Name:
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The section on Hand Washing Techniques uses notes from a technical report titled ‘Should We Shake Hands?’ written by Stuart McNeil of Gramos Applied Ltd and featured on The Society of Food Hygiene Technology website, www.sofht.co.uk in September 2004.

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GENERAL GUIDE

This will help to explain about the different components of the Fish Filleting Training Programme and how they can be used to aid the trainee's training and development.

INTRODUCTION

This training programme has been developed to demonstrate basic fish filleting techniques and to develop your skills and understanding of fillets and bone structures. It includes both round and flat fish filleting and skinning methods. Once the basic skills demonstrated are mastered, you will be able to develop your individual methods and speed, improving and fine tuning your skills.

The programme delivers training with step by step photographic examples supported with easy to follow written instructions. It is important that the correct equipment is used, when performing the various techniques. The learning materials also consist of a DVD, which can be used alongside the photographic and written material.

The focus of this training is to produce high quality, high yield fillets without time constraints. Speed will naturally develop with experience. These simple techniques form a solid foundation for a novice or semi-skilled filleter.

As a recommendation, the trainee may want to perform the various techniques on a mackerel (round fish) first, to gain confidence, before moving onto a flat fish such as a lemon sole.

TRAINING DELIVERY

Training is to be delivered by either in-house trainers or at a training provider through demonstration and coaching.

Training should be delivered at a time and pace to suit the company and the trainees. There are no fixed requirements for the amount of time spent training.

TRAINING RECORDS

A blank training record card has been included in this pack (see further page), which can be photocopied and completed by the trainer. This is **optional**. If the training is conducted at a training provider in a specific space of time (for example a day) with a group of four trainees, it probably won't be practical for the training records to be completed. However, if you are training in-house, it is probably more practical for the trainer to complete the training records as they probably won't be conducting training on all of the processing techniques in one go. You might also be conducting the training on a one to one basis rather than

in a group. If your trainer does complete the training record cards for you, the trainer is responsible for sending the original copies to Seafish, although you may want a set photocopying for yourself.

Training Record

Trainee's Name		**Trainer's Name**	
Company Name		**Company Name**	
Location			

Processing Technique Covered	**Skill Level Prior to Training**	**Learning Method**
Notes		

Trainer's Signature	**Date**
Trainee's Signature	**Date**

ASSESSMENT

When you have practiced completing the eight processing techniques and feel confident with your skills and knowledge, you need to contact Seafish (see last page of this workbook) to arrange your assessment with an approved trainer/assessor.

If you are completing your training at a training provider such as a seafood training school, you will probably be assessed on the day after you have completed your training.

If you are completing your training in house (at your place of work), you may be assessed on different days. This could be because you are assessed on two or three processing techniques at a time, rather than all eight techniques at once.

The areas that they will be assessing you on include:

- Quality of processed product;
- Yield of processed product;
- Level of throughput (you are not expected to achieve the speed of an experienced operative);
- Methods of working in terms of hygiene and health & safety.

Prior to the assessment, the approved trainer/assessor will present an example of each finished product that they have prepared. This will allow you to refer to each finished product during the assessment, if required.

You will be asked to process two or three fish for each processing technique and the approved trainer/assessor will observe how you work and may also ask you questions.

If you have any questions prior to the assessment, ask the approved trainer/assessor. Remember, they are there to answer any questions that you might have.

Good luck!

CLEANING & HYGIENE

Hygiene is the way in which the spread of potentially harmful bacteria is kept within safe levels. This is achieved in three main ways;

- **Temperature control including during handling and storage;**
- **Control of contamination;**
- **Cleaning.**

TEMPERATURE CONTROL

Fresh fish and shellfish are highly perishable, spoilage is caused by the action of bacteria. If seafood products are stored or processed at too high a temperature, not only will the life of the product be shortened, but harmful bacteria, invisible to the eye, but nonetheless dangerous, could multiply in the flesh. In the worse case scenario, this could lead to severe illness or even death. It is your responsibility to ensure that the temperature of the product is never compromised.

The ideal temperature for storing fresh seafoods is close to 0ºC or the temperature of melting ice. These low temperatures minimise the rate at which bacteria multiply, so extending the shelf life of the product. Most of the bacteria which cause food poisoning grow at temperatures between 5ºC and 63ºC. At temperatures ABOVE 63ºC most bacteria cannot multiply at all. At temperatures BELOW 5ºC most bacteria can only multiply very slowly if at all. Temperatures between 5ºC and 63ºC are known as the **danger zone**.

Be sure to keep the time when the product is above 5ºC to a minimum. Fish that you are not actually working on should kept stored under flaked ice and ideally in a box with a lid.

Low temperatures (not even freezing) DO NOT kill bacteria.

CONTAMINATION

Just a few words about contamination control. Bacteria can be found almost everywhere in our working environment. Where we go they go and where we have been they stay behind. We, food handlers, are the biggest potential threat to food safety. Frequent and effective washing of equipment, tools boards and hands is the best way to reduce the transfer of bacteria from one place to the next.

Other forms of contamination include chemical - getting cleaning chemicals on your fish is a typical example. Physical contamination refers to the inclusion of

bits of material in with the fish - the kinds of things that shouldn't be there such are wood splinters, polystyrene chips etc.

CLEANING

A clean area is not necessarily a hygienic area. There is a difference between visually clean and hygienically clean. Your work surface or equipment may look clean but still harbour thousands of potentially dangerous bacteria.

To be ***hygienically clean*** work areas and processing equipment like knives, de-scalers and steels must be treated with a detergent and disinfectant or sanitizer.

- ***Detergents*** help water to wash away greasy or fatty substances by helping them to dissolve in the water. They DO NOT kill bacteria.

Sanitizers and disinfectants

Sanitizers and disinfectants are often confused and both words may be used for the same product. Generally in the food industry, sanitizers combine the cleaning effect of detergents with the properties of disinfectants. The important questions to ask about any cleaning product are:

- Does it have detergent properties? i.e. does it clean?
- Does it have disinfectant properties? i.e. does it kill bacteria?
- Is it residual? i.e. does it leave a taint or residue?

It is important to realise that detergents do not kill bacteria and disinfectants do not remove grease and grime, while a suitable cleaning product may do both.

Always be sure to use the correct chemical for the job – this includes your hands and protective clothing.

CHECK YOUR COMPANY CLEANING POLICY AND ROUTINES.

HAND WASHING TECHNIQUES

People suffering from an upset stomach or vomiting will wonder often where they "picked it up". This phrase is probably nearer the truth than they realise because they probably "picked it up" from a surface that has been touched by someone with dirty or unwashed hands, namely, door handles (especially toilets), telephones, handrails, keypads – the list is endless. Many cases of stomach upset blamed on fast-food products are caused by the failure to wash the hands before consuming finger food.

From a food Industry point of view, this is a problem that must be met head on particularly where personnel are employed in a food handling capacity. Personnel need training in the methods of hand washing and disinfection and good habits must be instilled to achieve the best results. This is not possible if the products and equipment provided for hand washing are inferior or inadequate. Hand washing should not be an unpleasant experience.

The hand washing area should have a supply of anti-bacterial liquid soap in a clean, hygienic dispenser. Bulk, refillable dispensers are acceptable but need to be kept clean and disinfected, especially nozzles. It is preferable to have cartridge dispensing in High-Care areas where hygiene is paramount.

The soap itself should be non-perfumed, low odour, mild to the skin and taint free. There should also be fitted dispensers for post-wash disinfection of the hands containing an alcohol-based liquid or gel. This could be sited a little distance from the sink area (not too far) to avoid a "rush hour" type congestion.

If needed, a dispenser for skin conditioning cream could be made available for personnel with sensitive skins. This should not be necessary if hand washing soap and alcohol gel are of a suitable formulation, but the wearing of gloves can sometimes cause problems with dryness.

Drying of hands is very important after washing, not only from view of prevention of "chapping" but wet hands prevent the alcohol disinfectant from being effective. The preferred method of drying is the paper towel method but these should be of a reasonable quality, easily dispensed (one at a time) from a stable hygienic unit and there should also be adequate disposal bins for used items.

"To brush or not to brush, that is the question" but what is the answer? Nailbrushes are essential if nails are to be cleaned thoroughly but the care of these items is paramount in ensuring the success of their use. They must be cleaned daily and soaked in disinfectant to avoid spread of bacteria during use. The use of nailbrushes can also lead to spray of dirt whilst being used and subsequent contamination of surrounding fixtures, fittings, clothing and

personnel. Disposable plastic nailbrushes are available for use in High Care areas.

Water is an essential part of the hand-washing process and should be of good quality, with a decent water flow. Temperatures between 40-45 O C are ideal. Higher temperatures can scald skin causing dryness and irritation and both very hot and very cold water discourage good rinsing, which can lead to skin problems due to residual soap.

Taps should be knee operated or hands free design. Hand contact with taps during the washing process is not acceptable. It goes without saying that sinks, taps and all associated pipework and plumbing should be part of the daily hygiene scheduling and kept clean and disinfected.

A Summary

- Wet hands before applying liquid soap.
- Apply liquid soap (one pull of dispenser).
- Rub hands together vigorously for about 10-15 seconds (count – it's longer than you think!!).
- Make sure you wash both sides of the hands, fingers, thumbs, nails and wrists.
- Rinse thoroughly with clean water.
- Dry thoroughly with a clean paper towel.
- Apply alcohol liquid/gel to hands and massage into all surfaces.
- Allow to air dry (do not wipe your hands on your clean overall).
- If gloves are to be worn, apply alcohol liquid/gel to glove surfaces before work.

Don’t Forget

- Although wearing of wedding bands is allowed in food production areas, these are a potential source of infection and can be a site for bacterial pockets. Always lift and turn the band when washing/disinfecting.
- Nail varnish should never be worn in food factories. False nails or nail extensions are also not permitted.

- Nails should always be short and clean.

- All skin lesions, cuts or abrasions should be covered with a blue plaster or official dressing. Any infected cuts or skin problems should be reported prior to work.

PROTECTIVE CLOTHING

When handling fish it is essential that your outdoor, everyday clothes are covered. This is for two reasons:

- To protect the product from any loose material such as hairs or fluff which might fall from your clothes onto the fish. Remember you are handling food. People will eventually eat what you are producing.
- To protect your clothes from fish guts, blood and flesh.

Head coverings

- Your head should be covered by either a hairnet or hat with a snood which completely encloses the hair to prevent hairs from falling onto the fish.
- Any facial hair - moustache or beard should also be completely covered with a beard net.

Overalls

- Normal clothing should be completely covered by a clean washable overall.
- It is advisable to cover the overall with a plasticized apron which can be scrubbed.
- Disposable plastic gauntlets may be used to protect sleeves.

Footwear

- White rubber Wellington boots which are waterproof and easy to keep clean.
- Never wear outdoor shoes in a food preparation area – if wearing special boots is impractical, outdoor shoes should be covered with disposable plastic boot covers.

Maintaining Protective Clothing

Your protective clothing must be kept clean, to help prevent contamination of the products.

When you have finished processing, scrub any scales, blood or guts from your apron and boots, wash them with a dilute solution of detergent or bactericidal cleaner and leave to dry.

Items made of fabric, such as overalls and hats must be laundered on a regular basis, preferably after each processing session so that you always have clean fresh protective clothing.

Disposable items must be used once only. Use fresh each time.

PREPARING THE WORK AREA

Before you start to fillet or process fish you must make sure that the area where you will be working is suitable and ready for use. Use the following checklist

- The **workroom** area should be clean and tidy, free from any rubbish, any external doors and windows should either be closed or covered with suitable barriers to exclude flies and other pests.

- **Tools** you will need should be assembled. Check that they are clean, sharp and do not have loose handles. Any tools which you will not need must be correctly stored away from the preparation area.

- **Cutting tables** and blocks must be clean and free from all debris.

- **Bins** for the storage of fish waste must be clean.

- **Clean boxes** for the storage of the finished product should be in place.

- Supplies of **ice and protective film** for covering the finished product should be in place.

- Put on **protective clothing** and wash hands.

Only when you are sure that everything is ready should you begin work.

SAFETY & CARE OF TOOLS

FISH PROCESSING TOOLS

All knives used in fish processing must have moulded plastic handles – they are easier to keep ***hygienically clean*** than wooden handles.

Equipment

Boning Knife
5 inch hard stainless steel knife, designed to cut through small bones with losing its edge. Ideal for fish and easy to handle.

Filleting Knife
7 inch soft stainless steel knife, designed to bend when pressure is applied to the side of the blade through the handle. Again, ideal for fish filleting and skinning.

Steaking Knife
10 inch hard stainless steel knife, ideal for steaking whole fish and cutting through large bones.

Fish Scaler
Light weight alloy scaler with a small head and blunt teeth. Designed to remove scales with ease when drawn down the length of the fish from tail to head, without scattering the scaled around your work area.

Scissors
Sharp, study short bladed kitchen scissors with a strong handle. Ideal for trimming fins, regardless of the size.

Smooth Steel
A smooth steel is designed specifically to sharpen soft stainless knives such as filleting. Frequent light use will ensure a razor edge is maintained.

The main tools used are:

- Filleting knife - long thin flexible blade;
- Steaking knife - large usually rigid broad blade used in conjunction with a steaking mallet;
- Skinning knife - a blade longer than the width of the fillet to be skinned;
- Steel or chantry to keep knives sharp.

To be effective and to make the processors job easier and safer, it is important to use SHARP knives.

KNIFE SAFETY

- Always store your knives safely in a knife rack or sterilising rack when not in use.
- Be aware of where your knives are in relation to where your hands are.
- Don't leave a naked blade lying on the block when the knife is not in use.
- Never cut towards yourself.
- Never hold a knife by the blade.
- Always use the right tool for the job – don't try to steak with a filleting knife.

- Keep your knives sharp – you are more likely to inflict a serious wound if you slip with a blunt knife because you are applying more pressure to force the knife through the flesh.

SHARPENING KNIVES

For a very worn or dull blade it may be necessary to regrind using a rotary grinding wheel. The knife must be held at an angle of roughly 20º to the grinding surface to produce a good lasting edge. It is advisable to wear safety goggles when using a grinding wheel to protect your eyes from sparks.

To maintain an edge on the knife, use either a steel or a chantry.

Using A Sharpening Steel

Place the pointed end of the steel firmly on the work bench with the handle uppermost. Angle the knife away from your body and using firm movements, stroke the edge of the knife blade down the steel from top to bottom, at the same time moving it across the steel from the knife handle to the point of the blade. The knife blade should be at about a 20º angle to the steel. Repeat the action on the other side of the steel with the opposite side of the knife.

Using A Chantry

A chantry consists of two sharpening surfaces housed in a plasticized metal case. The two sharpening surfaces are held at an angle to each other so that when you draw the knife backwards and forwards through the gap in a sawing motion, the blade is automatically presented to the sharpening surfaces at the correct angle. This is much easier for a novice to use.

CLEANING PROCESSING EQUIPMENT

When you have finished using your knives, you must make sure that they are clean before storing them safely.

Firstly rinse off all scraps of flesh and scales with cold water, then thoroughly wash the knives, cutting blocks, descalers, mallets and any other equipment in a solution of hot water and detergent. Follow the manufacturer's instructions on dilution – do not be tempted to add more detergent than advised, using twice the amount of detergent won't make it twice as clean. Rinse with clean water and leave to air dry naturally. If a sanitising rack is used, knives are left with the blades immersed in the sanitising solution. Again, follow the manufacturer's instructions when preparing the sanitising solution.

REPLACING WORN EQUIPMENT

Cutting blocks will, over time become scored and marked by constant use. The knife cuts will become difficult to clean and will harbour bacteria. It is possible to regrind them to give a clean, smooth working surface, but eventually they will need to be replaced.

Similarly, knife blades will become worn, they get shorter as they are constantly sharpened.

It is easy to overlook the fact that tools which are in daily use are at the end of their useful life. You need to be vigilant in checking that the tools are still fit for purpose and replace them as needed.

STORAGE AND WASTE DISPOSAL

STORAGE OF WET FISH

- RECEPTION - When wet fish is received, boxes must be opened and the contents checked for quality and to ensure that they are covered with flake or shale ice. Keep lids on the boxes, store in a chilled room or container until required, ideally at a temperature of between -1ºC to +1ºC. If it is any colder, the fish will freeze, any warmer and the fish will start to deteriorate.

- DURING PROCESSING - Do not expose either whole fish or prepared fillets to temperatures above 5º C for any longer than absolutely necessary for the processing. Keep lids on the boxes, only take as much raw material as you can comfortably process in 10 minutes.

- AFTER PROCESSING - Store prepared fillets flesh to flesh in pairs. Place flat in a clean box, cover with plastic sheet to minimise ice damage and cover with a good layer of ice before putting the lid on the box and returning it to the chilled holding area. Treat the fillets gently, do not screw them up or throw them into the box anyhow. The flesh is delicate and easily damaged by rough handling and by direct exposure to the ice.

WASTE DISPOSAL

- DISPOSAL OF FISH WASTE - Fish waste – heads, guts, bones etc must be kept segregated from non fish waste (boxes, paper, box ties etc). Fish waste must be disposed of in accordance with your Local Authority trade waste guidelines. It will be either incinerated, composted or rendered. It MUST NOT be sent to landfill sites.

- DISPOSAL OF NON FISH WASTE - All other waste generated by fish processing, boxes, paper etc. can be disposed of by normal means. It may be useful to contact your Local Authority to check any local bylaws governing the disposal of such waste.

PROCESSING TECHNIQUES

Flat Fish Lemon Sole *Microstomus kitt*
Length: Maximum about 66cm (26in) Usually 30cm (12in)
Weight: Maximum 1.1kg (2lb 7oz)

A smooth, oval, demersal flat fish with a small, right facing head. The dorsal fin rises above the upper eye running the length of the body to the tail. The lower anal fin is shorter, also reaching the square ended tail. The upper side is a warm brown with irregular dark brown markings and flecks of yellow and green. The underside is usually white, although occasional variations may occur. Even though the skin is smooth to the touch, scales can be removed

A bottom dwelling fish mainly found on sand and occasionally gravel. Can be found in off shore areas of shallow water. Most abundant in depths of 40 to 200 metres.

Spawns in spring and summer. The eggs and young fish float near the surface, until they reach a length of around 30mm, when they settle on the sea bed. Eats mostly polychaete worms, also molluscs and crustaceans.

Flat Fish (head off & trim)
Lemon Sole

Fresh sole will be covered with a clear slime. For training purposes it would be better to wipe this from the skin. Sole will always be gutted at sea and there will be a cut through the fish, behind the head, where the gut was removed. Place the sole dark side up with the head towards you. You will require your boning knife for this process. Hold the sole by the head, thumb on top, fingers underneath, and without lifting the sole, and twist the head upwards. Your aim is to remove the small head using its bony structure as your guide.

You will need to apply more pressure to cut through the centre bone. Do not jerk the knife as you will lose control and reduce the yield. Once through the backbone the final cut is almost circular, back towards the front of the fish.

To achieve the best results when trimming your sole hold the fish off the table. There is a natural curved line at the base of the tail fin. Using your scissors remove the tail following this curve. Holding the sole with the tail towards you, carefully cut along the natural curve at the base of the fins, towards the head. Repeat this process on both sides of the fish.

Remove the blood from inside the cavity by using the tip of your knife to cut through the membrane. Wash the inside of the cavity to remove all the blood. Finally, using your scissors, trim around the head end of the fish for perfect presentation.

The same technique can be performed using a plaice.

Round Fish Seabass Dicentrarchus labrax
Length: Maximum about 1m (39in) Usually 60cm (24 in)
Weight: Maximum 8.6kg (19lb)

A slim, torpedo shaped body with a relatively large head, wide mouth and small eyes. The head has two sharp razor-like spines on top of the gill. Two well separated dorsal fins, the first with eight or nine strong spines. A smaller anal fin with three short spines located at its front. The body is covered with large scales. Greeny grey on the back, shading into brilliant silver sides with a sliver-white belly.

Spawns from March to June in inshore waters. The young are pelagic, but quickly enter estuaries, remaining there for up to two years. Eats a variety of small fish, particularly sand eels and crustaceans. Seasonally migratory, found in schools in coastal waters and estuaries. Lives near the surface and is found in particular near breakers and rocks.

Round Fish (trim & gut)
Seabass

Due to its large scales, seabass should be scaled prior to trimming. Great care must be taken when handling seabass, as the dorsal fins and head have sharp spines. Using your scissors remove all fins, cutting as close to the fish as possible. Remove the tail by cutting around the natural curved line at the base of the tail fins.

Carefully lift the gill cover and insert your boning knife between the gill and the pectoral fin. Cut completely through the underside of the fish at the base of the gill.

Keeping the gill exposed, use your knife to cut around the curve of the gill, separating it from the body of the fish. Grasp the gill firmly in your hand and twist it forward, out from the head cavity. The gill will still be connected to the fish at the base of the head. To fully remove the gill, cut through this join. You will need to check inside the gill cavity to ensure all remnants of gill have been removed.

Position the fish in front of you with the tail towards you. Insert the tip of your boning knife into the anal vent. Cut forward along the centre of the belly to the head. Be careful not to push the knife too far into the gut cavity, as this could damage the fish.

You can now lift the top flap, revealing the cavity. Place your knife behind the gut and gently push the gut out of the body cavity and discard. Do not use your hands for this process.

To remove the blood from the fish, you will need to cut through the white membrane, along the backbone. Insert the tip of your blade under the membrane at the head, and gently cut along both sides of the membrane. This exposes the blood cavity. Draw the tip of your blade back along the bone, from tail to head, through the blood.

Wash the gut cavity thoroughly; you may need to use a cloth to remove residual blood. When complete there should be no blood left inside the cavity.

The same technique can be performed using a mackerel.

White Fish Cod *Gadus morhua*
Length: Maximum about 1.5m (5ft) Usually 1 – 1.2m (3 -4ft)
Weight: Maximum 45kg (100lb)

A stout bodied, demersal fish with a large head and chin barbel. It has 3 rounded dorsal fins and 2 anal fins. The upper jaw overhangs the lower jaw. Olive brown or greenish, with lighter sides and white stomach. The lateral line is light and curved.

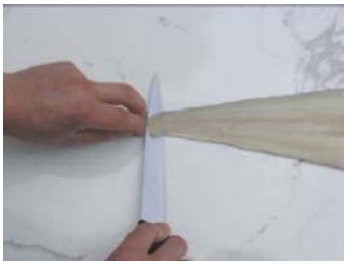
Cod gather in shoals a few metres off the sea bed and feed on the bottom. Spawns from February to April. The adults make annual migration to specific spawning grounds.

Eats an enormous range of bottom living fish and invertebrates.

Found in the Atlantic and Pacific Oceans.

White Fish Fillet (skin)
Cod

Place the fillet along the near edge of your board (as insert), ensuring the skin is flat against the board. Position your body with the fillet in front of you, running left to right. Stand to the left of the tail. Your right shoulder should be level with the tip of the tail. You will require your filleting knife for this process. Hold the tip of the tail firmly in your left hand. Place the back edge of the knife against your fingers angled slightly towards the skin. Start to cut between the skin and the flesh with a smooth sawing motion.



At this stage focus on moving the knife slowly forward, while lowering the angle of the blade, so that it is flat against the skin. Once the white/silver skin on the flesh is visible, stop. Regrip and pull on the skin, maintaining constant tension.

Hold the knife firmly and with constant, even pressure, pull on the skin and push the knife forward, up the whole length of the fillet. Ensure the handle of the knife runs along the front edge of your board (as insert). It is essential that your knife remains flat against the skin. The tip of the blade should be visible on the far side of the fillet. If the knife sticks at any stage, STOP. Pull on the skin and flatten the fillet against the board.

Pull the knife back slightly and begin the forward pushing motion again. Remember to maintain a constant tension by pulling on the skin and pushing forward with your knife. The aim is to achieve a white/silver skin appearance on the fillet, and no flesh on the skin.

White Fish Fillet (V-Bone & J-Cut)
Cod

The fillet is now skinless, but contains bones. These can be removed with 2 easy cuts. Feel for the line of bones, at the thick end following the lateral line of the fillet. Place the blade flat on the fillet, to the right of the bones. Gently cut into the fillet pulling the knife forward, cutting through the flesh.

Next place your blade against the fillet to the left side of the bones, and repeat the cut. This will allow you to remove a strip of flesh from the fillet containing all the bones. To create a neat J-Cut fillet, place your knife onto the belly flap and remove the thinnest part of the fillet.

Please note that a haddock can be used as an alternative to cod.

Round Fish Salmon *Salmo Salar*
Length: Maximum about 1.5m (5ft) Usually 1 – 1.2m (3 -4ft)
Weight: Maximum 36kg (80lb)

A round bodied fish with a relatively small head and forked tail. It has one dorsal fin and one adipose fin, an anal fin and a pair of both pelvic and pectoral fins. The beginning of its jaw is directly under its eye. It has a blue/grey back, silver sides and silver/white belly. The lateral line is black and straight.

Wild salmon are available in small numbers. Most salmon used is farmed.

Spawns summer to early winter in freshwater. Adult wild fish return to the river of their birth to spawn.

Wild salmon eat small fish and crustacean.

North Atlantic salmon range from the Arctic to Spain and from Greenland down the coast of Canada to the USA.

Round Fish (steak)
Salmon

All farmed salmon is supplied gutted, however, it is advisable to check inside the gut cavity and, if necessary, remove any residual gut or blood. Before steaking, the salmon should be descaled. This is a delicate procedure. Care should be taken not to damage the flesh of the fish by excessive pressure. Holding the fish firmly by the head, draw your scaler gently along the length of the fish from tail to head. You are working against the direction of the scales. Extra attention should be paid around the fins and on the lower belly. Once fully scaled wash the fish thoroughly.

Using your scissors remove all fins, cutting as close to the fish as possible. Remove the tail by cutting along the natural curved line at the base of the tail fin.

To remove the head you will need to use your steaking knife. Lay the fish on its side and hold the salmon by the head. Place the blade of your knife on top of the fish, behind the bony gill cover. Angle the blade forward towards the head. Firmly cut through the flesh until you reach the spine. The tip and handle of your knife should remain parallel to the work surface. Turn the fish over and repeat the cut. When the knife is against the spine, turn the blade upright and cut through the spine. This will require extra downward pressure. Place the fish with its back towards you. Hold the fish firmly, without squeezing the flesh, to prevent it moving.

Place your steaking knife on top of the fish, with the blade parallel to your work surface. The head end of the salmon should be in line with your shoulder. In one smooth motion cut down through the flesh until you feel the spine. You now need to sharply push the knife through the spine and continue the cut through the underside, ensuring the steak is fully released.

The first steak will be an irregular shape. To maximise yield remove the belly flaps. Turn the steak on its end and split down the middle (see insert). Do not cut all the way through. This will enable you to produce an extra usable portion from your salmon. Holding your salmon firmly cut the rest of the fish into equal sized steaks. Great care should be taken to ensure straight, clean cuts are made. Each steak should be fully released before the next cut is made. By using a sharp knife you will not require a mallet, as this only damages the flesh. Stop cutting steaks when you reach the anal vent. To make the salmon tail more presentable, score the skin with three even, deep cuts on both sides.

Round Fish Mackerel *Scomber Scombrus*
Length: Maximum 66cm (26in) Usually 40cm (16in)
Weight: Maximum 2.8kg (6lb2oz)

A slender bodied, pelagic fish with a streamlined body and head. It has 2 separated dorsal fins (11-13 spines in the first fin) followed by a series of 5 finlets. Small anal fin again followed by 5 finlets. A forked, widely spread tail with 2 keels at its base. Brilliant blue-green back with black curved lines, white sides with pink and gold reflections. Bright colours fade quickly after death.

Gathers near the surface and midwater in huge shoals. Strongly migratory, swimming north in the summer and south in the winter.

Spawns May to August. The eggs and larvae float near the surface.

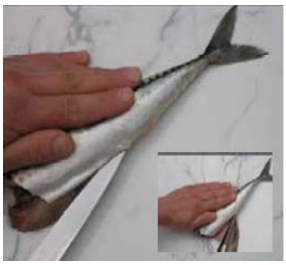
Eats plankton, crustaceans and fish larvae. Adult fish feed heavily on other small species.

Mackerel, as with all pelagic fish, are high in Omega3 oils.

Round Fish (single fillet)
Mackerel

Place the mackerel on the board directly in front of you. Fold the pectoral fin forward and hold it with your thumb against the head. With the boning knife put the butt of the blade directly on top of the fish, in front of the folded fin.

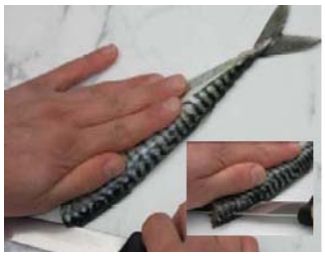
To achieve a good yield the knife needs to be angled away from the head (see photo). In one smooth cut remove the head and fins. Do not apply any pressure to the flesh of the fish. Without moving the mackerel, insert the knife into the gut cavity and gently push forward towards the vent.



Ensure the cut does not extend beyond the vent. Be careful not to push the knife too far into the gut cavity, as this could damage the presentation of the fillet. You can now lift the top flap, revealing the cavity. Place your knife behind the gut and gently push the gut out of the body cavity and discard. Do not use your hands for this process.

Rotate the mackerel, so the back is now towards you and the head end is pointing away. Take your filleting knife and place the middle of the blade against the top of the fish, just above the centre bone (see insert). Hold the fish by gently placing your hand on top of the fish, above the blade. Imagine the bone running along the length of the fish. Pull your knife slowly in a continuous movement, following this imaginary line. Do not try to release the whole fillet in one cut. The aim is to cut along the back of the fillet, only as deep as the ribcage (see photo). Slight downward pressure needs to be applied to the tip of the knife to ensure good yield is achieved. Three-quarters of the way down the fish, STOP. Ensuring your hand is not in the way of the blade, gently push the tip of the knife forward into the gut cavity. The blade should be visible on both sides of the fish (see photo).

The blade needs to be flat against the bone. In a smooth stroke, pull the knife down the length of the fish, towards the tail. As the knife approaches the tip of the tail, ensure you control the blade until the tail of the fillet is released. Carefully lift the front of the fillet and place the blade of your knife on top of the exposed bone. Using the first 2 inches of the blade, angle the knife towards the gut cavity, and draw the blade down the fish towards the tail. Follow the ribcage, but DO NOT cut through the bone. This will totally release the first fillet from the bone. It may help at this stage to study the bone structure, as this will give a better understanding of what you are trying to achieve.



Turn the fish over with the tail end away and the back towards you. The bone will now be flat against the board. Position the centre of the blade against the front face of the mackerel, just above the bone. Gently place your hand flat on top of the fish, ensuring your hand does not make contact with the work surface. Keeping the knife on top of the bone, push the handle forward, drawing the blade along the length of the bone. A continuous slight downward pressure needs to be applied.

The positioning of your knife is extremely important. The blade must be behind the handle, as the knife is pushed forward along the bone.

This fillet is released in one cut. As you push forward, the blade needs to be visible on both sides of the fish. Steady control must be applied to the knife. If any rib-bones are left on the fillet, these can be carefully removed with your knife.

Round Fish (cutlet)
Mackerel

Hold the mackerel with its stomach flat on the board. Place the tip of the knife on top of the mackerel, behind the head. Gently saw the knife downwards until you reach the bone. Do not cut through the bone. Now turn the mackerel onto its side, stomach towards you, at the edge of the block. Position your body in line with the tail of the mackerel. Hold the fish firmly by the head and place the butt of the blade behind the pectoral fin. The tip of the knife should touch your work surface.

Keeping the handle of your knife higher than the fish, follow your original cut, and pull the blade towards you, creating a curve, rather than a straight cut (see photo). Once the very tip of the blade disappears into the fish, STOP.

Turn your blade to run parallel to the work surface. It must be flat on the bone, and at 90º to the stomach of the fish. Your aim is to release the fillet using the first 2 inches of the blade, without cutting through the skin along the back of the fish. Smoothly pull the knife along the length of the fish towards the tail, keeping on top of the bone. At this stage, the fillet can be lifted from the bone. If the fillet does not lift away easily you may have to repeat the cut with the tip of your knife. The inside of the skin should be visible as a black line running along the back of the fish.

Turn the open fish over, so that the bone and the flesh of your first fillet are face down on the board. The head is to your left and the stomach is towards you. Fold the pectoral fin forward onto the head, and holding the fish firmly; place the butt of the blade in front of the folded fin. The tip of the knife should touch your work surface.

Keeping your knife at a downward angle, pull the blade towards you until you feel resistance from the bone. At this stage turn your knife flat on top of the bone, parallel to the work surface. Your knife must be visible on both sides of your fillet. Gently apply pressure to your knife to produce a slight, natural bend in the blade. Push forward, ensuring the handle of your knife is ahead of the blade. Apply continuous downward pressure to keep your knife slightly bent for the length of this cut. The bent knife must have continuous contact with the spine. You will feel a slight resistance from the bone during this process. It is essential to be in control of the knife.

Your aim is to achieve a single, slow, continuous cut from beginning to end. This will produce a rounded edged fillet (see photo). There will be flesh left around the stomach area, on the skeleton. This is acceptable with this style of filleting. If any rib-bones are left on the fillet, these can be carefully removed with your knife.

Flat Fish Plaice Pleuronectes platessa
Length: Maximum 1m (39in) Usually 50cm (20in)
Weight: Maximum 4.6kg (10lb 3oz)

A broad, deep bodied, demersal, flat fish with a small, right facing head. The dorsal fin begins above the eyes running the length of the body to the tail. The lower anal fin only runs three-quarters of the length to the relatively long, squared ended tail. The upper side is a warm brown with bold orange or red spots. The underside is usually pearly white, although variations often occur, sometimes to the extent of two dark sides. The underside will not have the coloured spotting.

A bottom dwelling fish whose habitat varies from sand to gravel or mud. Can be found in any depth of water, but most abundant in 10 to 50 metres.

Spawns from January to March. When in roe, the eggs can equate to 50% of the total body weight. The eggs and young fish are pelagic, until they reach a length of around 18mm, when they settle on the sea bed.

Eats molluscs, crustaceans and worms.

Flat Fish (Cross-cut fillet)
Plaice

Fresh plaice will be covered with a clear slime. For training purposes it would be better to wipe this from the skin. Plaice will always be gutted at sea and there will be a cut through the fish, behind the head, where the gut was removed. The white fillet is naturally thinner, so you should start with this side. Position the fish with the head in front of your right shoulder, tail pointing away. Standing at arms length place your left hand on the fish, to the left of the lateral line. With your thumb inside the gut cavity, lift the fillet to enable you to see inside. Insert the tip of your knife into the fillet at the back of the cavity just above the bone (see insert).

With the back of the blade against the right hand side of the lateral line push the knife forward, ensuring it remains level, above the skeleton. You should be able to see the outline of your knife through the skin. Insert the knife as far as possible, then with a slow sawing motion, move the blade to the right, along the top of the bone.

Continuous pressure needs to be applied to the back of the knife, guiding the blade towards the curve of the fin. You will find the knife will release the fillet with ease, along the length of the fish, from head to tail. If the fillet is not released with your first cut, lift the front of the fillet; replace the back of your knife along the lateral line, on top of the bone. Repeat the process with a slow sawing motion, until the tail is reached.

There is a raised ridge in the skeleton, running directly beneath the lateral line of the fish. This acts as your guide when placing the back of your knife into the fish. At this stage your knife should never cross this ridge.

Ensure the tail end of the fillet is fully released (see photo). The fish must remain in position on the work surface, hold the outer edge of the released fillet and gently pull back, over the left hand side of the fish. This will expose the bone and ridge following the lateral line. Raise the handle of your knife high, vertically above the lateral line, near the tail end of the fish. With the blade towards you, insert the very tip of the knife into the left hand side of the fillet, just inside the ridge. Cut downwards, only a few millimetres, until you feel the bone. With a firm grasp of the released fillet, pull the knife towards you along the full length of the ridge. As you reach the gut cavity you will feel resistance from the rib bones. You may need to sharply jerk your knife, ensuring full control, to complete the cut. Now, release the fillet from the head by cutting around the left hand side, to the very tip of the fillet.

Keeping the fillet wide open, turn your knife and place the edge of the blade away from you, along the left hand side of the ridge. Keeping the blade flat, push the handle of the knife towards the tail in a sweeping motion, following the curve of the fin. This cut will not fully release the fillet. Place your knife flat on the bone in front of the head. The tip should be visible at the head of the fish (see photo above). Lay the released fillet back on top of the knife, and in a sweeping motion push the knife towards the tail ensuring the tip is visible at all times.

The handle of your knife should be ahead of the blade at all times while making this cut. The tip should follow the natural shape of the fillet, remaining on top of the fin. Once the knife reaches the tail of the fish, the fillet will be fully released.

Turn the fish over and holding the head, run your knife around the bony curve, keeping as close to the head as possible. Cut down to the bone. Holding your knife parallel to the block, insert the tip into this cut on top of the bone. With the back of your blade against the right hand side of the lateral line, push the knife forward ensuring it remains level, above the skeleton. You should be able to see the outline of your knife through the skin. Insert the knife as far as possible, then with a slow sawing motion, move the blade to the right, along the top of the bone.

Continuous pressure needs to be applied to the back of the knife, guiding the blade towards the curve of the fin. You will find the knife will release the fillet with ease, along the length of the fish, from head to tail.

Ensure the tail end of the fillet is fully released. The fish must remain in position on the work surface, hold the outer edge of the fillet, and gently pull back, over the left hand side of the fish exposing the ridge. Raise the handle of your knife high, vertically above the lateral line, near the tail end of the fish. With the blade towards you, insert the very tip of the knife into the left hand side of the fillet, just inside the ridge. Cut downwards, until you feel the bone. Pull the knife towards you following the left hand side of the ridge.

Keeping the fillet wide open, turn your knife and place the edge of the blade away from you, along the left hand side of the ridge. Keeping the blade flat push the handle of the knife towards the tail in a sweeping motion, following the curve of the fin.

As before, it may take more than one cut to fully release the fillet. Always ensure you are in full control of your blade. Slow, continuous motion will produce perfect results. Both fillets will require trimming to remove rib bones, and possibly fins.

Rib bones are removed by firstly placing the white fillet tail towards you. With the blade on its side, place the tip onto the block in front of the fillet, at the lateral line. Putting pressure on the knife to create a bend, draw the knife back on top of the fillet. Your aim is to slide the cutting edge of the blade under the rib bones with a gentle sawing motion, scooping the bones from the flesh. Repeat this method, cutting in the opposite direction with the dark fillet. Fins can be easily removed by holding your knife vertically and cutting around the outer edge of the fillet.

Summary

This pack should be used as a constant reference document throughout your development. Each step should be read through and understood before attempting the process.

To gain a better understanding of what is required to perfect your skills, you should study the bone structure of each fish you process. By looking at the carcass, and taking note of any remaining flesh, you can correct your technique accordingly.

Once mastered, you will be able to take the basic skills demonstrated within this pack, and with practice your confidence and ability will improve. You will develop your own unique style, aspiring to produce the highest quality finished product.

FURTHER TRAINING

For information regarding Food Safety training, Health & Safety training and Seafood Quality Assessment training, please contact Seafish Training & Accreditation on 01472 252302, or email training@seafish.co.uk

Alternatively, you can write to:

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