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Pre-processing and use of potable water in fish and shellfishes Processing



CHECKLIST FOR FISH FRESHNESS

Fresh fish

- ODOR- fresh and mild, no off odors
- Eyes- clear, shiny, bulging
- Gills- red or pink
- Texture of flesh- firm elastic
- Scales- shiny, tight on skin

Not-so fresh fish

- Strong “fishy” odor
- Cloudy, sunken
- Grey or brown
- Soft, dents easily
- Loose not shiny

STORING FRESH FISH

Fish and shellfish are some of the most perishable foods to handle

Storing fresh fish: objective

- To maintain temp of 30F-34F(-1C--+1C)
- To keep the fish moist
- To prevent the fish odors and flavors from being transferred to other foods.
- To protect the delicate flesh from being bruised or crushed

Methods:

On crushed ice – the preferred method. use drip pans to allow for drainage of melted ice

In refrigerated box at 30F-34F(-1C-+1C), if crushed ice storage is not available or practical. Wrap all fish or leave in original moisture proof wrap

Checking quality for frozen or processed fish

Some of the processed fish products are inspected and graded by the U.S Department of Commerce.

Fresh fish is not federally inspected.

- **INSPECTION** – Assures *cleanliness*, *wholesomeness*, *safety*, and *accuracy* of labeling.
- **GRADING** – indicates that the product meets quality standards for *appearance*, *flavor* and *uniformity*.

CHECKING QUALITY

- Frozen products should be frozen when received not thawed.
- Look for fresh, sweet odor or none at all. Strong fishy odor means poor handling.
- Items should be well wrapped, w/ no freezer burn
- Some frozen fish is glazed with a thin layer of ice to prevent drying. Check for shiny surface to make sure glaze has not melted off or evaporated.

STORAGE

- Store at 0F(-18C) or colder.
- Keep well wrapped to prevent freezer burn.
- Maximum storage time: fat fish 2months, lean fish 6months.
- Rotate fish, first in first out.

THAWING AND HANDLING

Frozen raw fish:

- thaw in refrigerator, never at room temp. allow 18-36 hours, depending on size. Alternative method, keep in original moisture proof wrap and thaw under running water.
- Small pieces (fillets steaks portions) up to 250g can be cooked from frozen state to make handling easier and to prevent excessive dripp loss. Large fish should be thawed for more even cooking from surface to interior.
- Fillets or other portions that are to be breaded or prepared in some other way before cooking maybe partially thawed then prepped and cooked. They will handle more easily than if fully thawed.
- Handle thawed fish as you would to fresh fish.
- Do not re-freeze.

Breaded and buttered fish, fully prepared entrees and other frozen, prepared fish items:

- Read and follow package directions.
- Most of the items are cooked from the frozen state, usually in the deep fryer, oven, microwave or steamer.

Canned Fish:

- Check cans for signs of damage. Discard swollen cans, or return to the supplier.
- Store like other canned goods, in a cool dry place.
- Opened canned fish should be placed in covered containers, labeled w/ the contents and date, refrigerated. It will keep for 2-3 days.

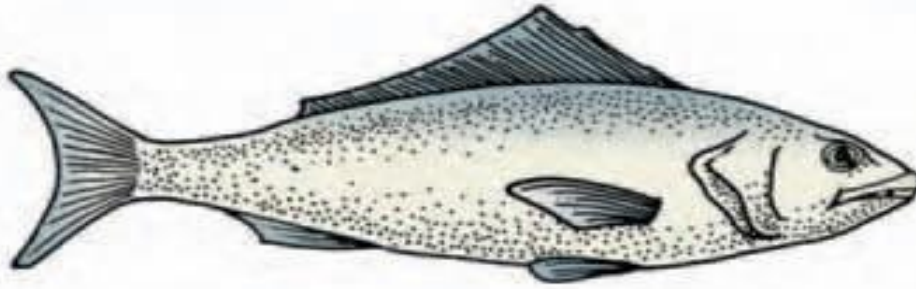
LEAN FISH:

- Moist-heat method- specially suited for poaching. This method preserves moistness.
- Dry-heat method- broiled or baked should be basted with butter or oil.
- Dry-heat method with fat- may be fried or sauteed. The fish gains palatability from the added fat.

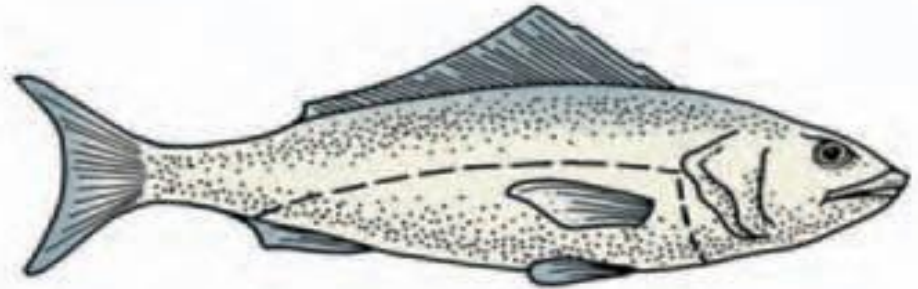
FAT FISH:

- Moist-heat method- can be cooked by moist heat.
- Dry-heat method- broiling and baking. The dry heat helps eliminate some excessive oiliness.
- Dry-heat method with fat- large fat fishlike salmon or stronger-flavored fish like bluefish or mackerel are rarely cooked in fat. Take care to avoid excessive greasiness.

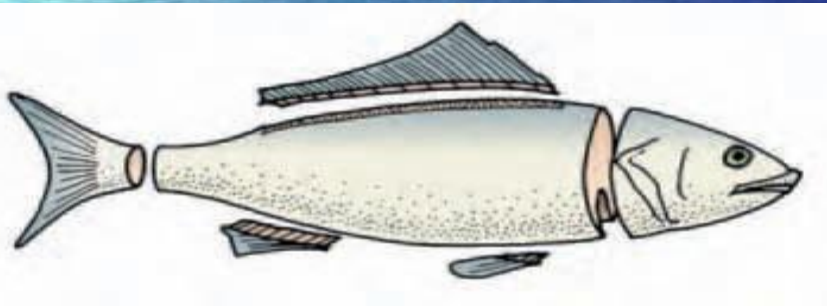
MARKET FORMS



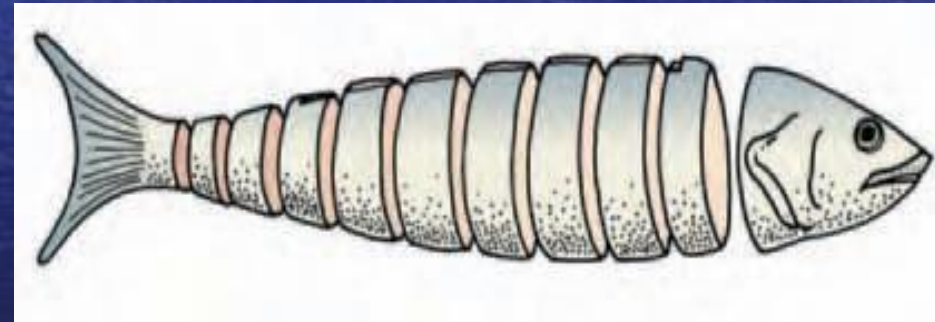
(a) Whole or round: completely intact, as caught



(b) Drawn: viscera removed

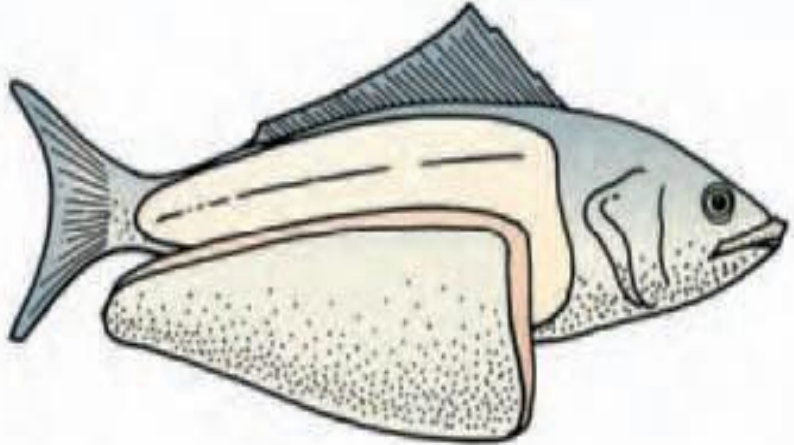


(c) Dressed: viscera, scales, head, tail, and fins removed

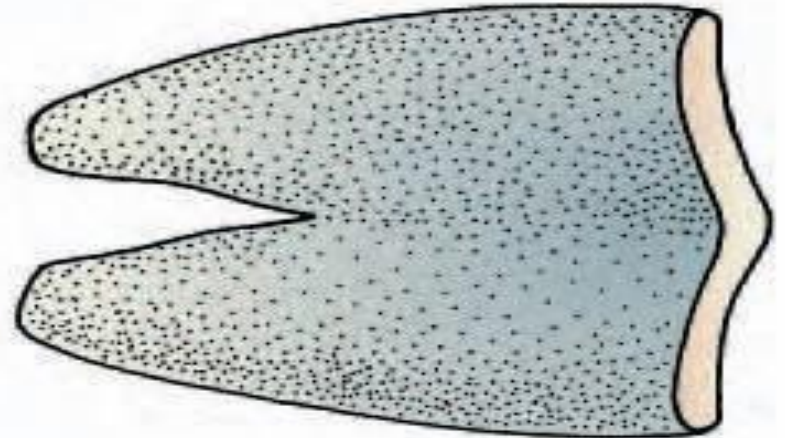


(d) Steaks: cross-section slices, each containing a section of backbone

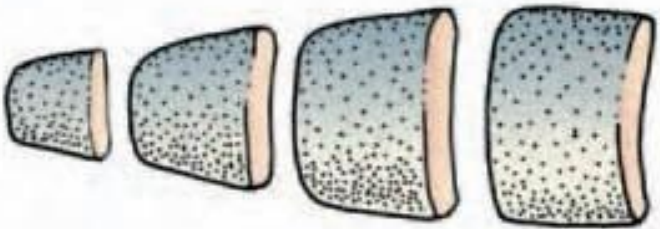
MARKET FORMS



(e) Fillets: boneless sides of fish, with skin on or off



(f) Butterflied fillets: both sides of a fish still joined, but with bones removed



(g) Sticks or tranches: cross-section slices of fillets

BASIC CUTS

- **La Darne** A slice or steak of round fish on the bone. E.g. Darne de Saumon, Darne De cabillaud.
Le Troncon A slice or steak of flat fish on the bone. E.g. Troncon de Turbot, Troncon De barbue.
Le Filet A fillet of fish, usually from a small fish without bones. E.g. Filet de sole, Filet de plie.
Le Supreme Applied to large fillets of fish, cut into portion on the slant e.g. Supreme de Fletan, Supreme de Aigrefin.
Le Delice Applied to neatly folded fillets of fish e.g. Delice de Sole, Delice de Merlan.
Le Goujon Applied to fillet of fish cut into strips approx. 6 cm. x ½ cm. (3 in x ¼ in) usually floured, egg-washed and bread crumbed e.g. Goujon de Plie, Goujon de Sole.
La Paupiette This term is applied to fillets of smaller fish, usually sole which are stuffed with farce, fish or vegetables, or mixture of both, neatly rolled into a barrel shape, tied or pinned.



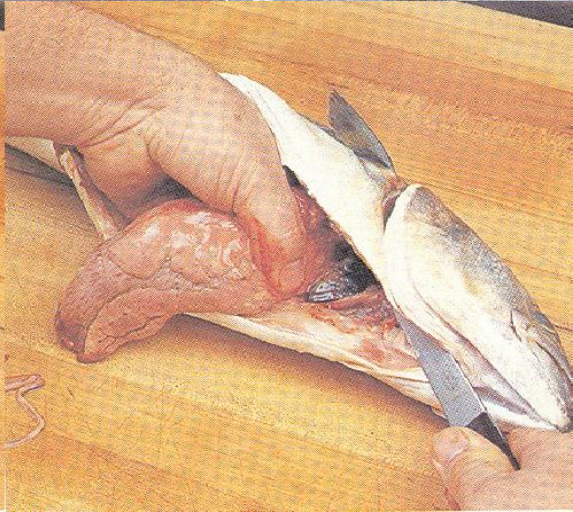
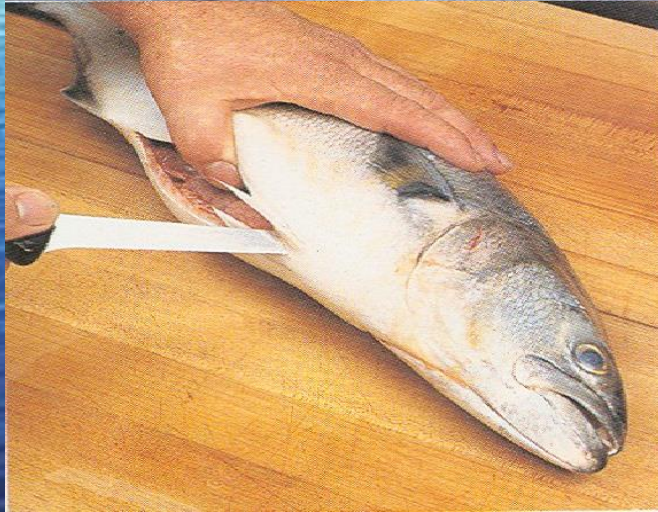
- ***CLEANING OF FISH***

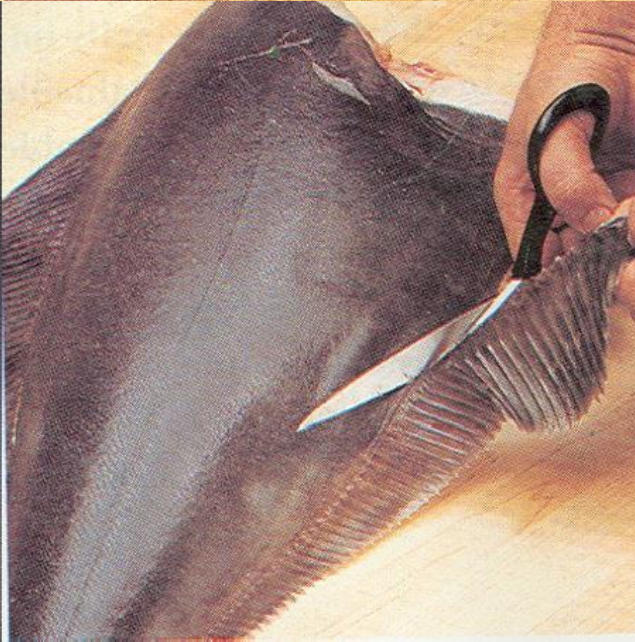
- De-scaling And Cleaning

- 1. Soaking the fish in cold water for a few minutes before descaling, helps in removing scales more easily.
- 2. The blunt side of the knife should be used.
- 3. The head of the fish is held with the left hand and holding the knife vertical, scraping is done starting from the tail, working towards the head, the scales are scraped off. The fish is then washed to remove any loose scales.
- 4. Cut off the fins, remove the head. The entrails should be removed by cutting the length of the fish from the vent end to the head on the belly side.
- Filleting
- Cut the flesh along the line of the backbone and raise the fillet from the middle of the back, to the sides, first working towards the head, then the tail.
- Skinning
- Hold the tail end of the fish in the left hand, first sprinkling salt on the fingers for a good grip. Skin the flesh (skin side down) from tail to head, with quick short sawing strokes of a sharp knife. Point the knife blade towards the skin so that no flesh is wasted.

CLEANING OF FISH

SCALING, GUTTING





DRESSING AND FILLETING

flatfish



(a) Use a thin-bladed, flexible knife. Cut off the head, just behind the gills.

(b) Make a cut from head to tail just to one side of the center line, down to the backbone.

DRESSING AND FILLETING



(c) Turn the knife so that it is almost parallel to the table. Making long, smooth cuts, cut horizontally against the backbone toward the outer edge of the fish. Gently separate the fillet from the bone.

(d) Remove the fillet completely. Repeat to remove the three remaining fillets.

DRESSING AND FILLETING



(e) To skin, place the fillet skin side down on the work surface with the tail pointing toward you.

Holding the skin at the tail end, slide the knife between the skin and flesh, scraping against

the skin to avoid cutting into the fillet.

Note:

Dover or English sole is skinned before filleting.

Cut through the skin at the tail. Holding the tail

with one hand, peel off the skin toward the

head. **Caution: Do not do this with flounder. You will tear the flesh.**

DRESSING AND FILLETING

Filleting round fish.



(a) Cut into the top of the fish along one side of the backbone from head to tail. Cut against the bone with smooth strokes of the knife to separate the flesh from the bone.

(b) Cut under the flesh toward the tail; detach it.

DRESSING AND FILLETING



(c) Cut along the curved rib bones and finish detaching the fillet at the head end. Turn the fish over and repeat to remove the second fillet. Lightly run your finger along the flesh side of the fillets to see if any bones remain in them. Pull out any you find. Skin the fillets as for flatfish.

COOKING FISH

Flaking - when fish is cooked, the flesh breaks apart into its natural separations.

Doneness:

- The fish just separates into flakes; that is, it is beginning to flake but does not yet fall apart easily.
- If bone is present, the flesh separates from the bone, and the bone is no longer pink.
- The flesh has turned from translucent to opaque (usually white depending on the kind of fish

- **Fat fish** : are those that are high in fat. Ex: salmon, trout, butterfish, cod, seabass

- **Lean fish** : are those that are low in fat. Ex: flounder, red snapper, sole, perch, halibut.

*the fat content of fish ranges from 0.5 percent to 20 percent.

COOKING FAT FISH

- The fat in these fish enables them to tolerate more heat without becoming dry.
- *Moist-heat methods.* Fat fish, like lean fish, can be cooked by moist heat. Poached salmon and trout are very popular.
- *Dry-heat methods.* Fat fish are well suited to broiling and baking. The dry heat helps eliminate excessive oiliness.
- *Dry-heat methods with fat.* Large fat fish, like salmon, and stronger-flavored fish, like bluefish and mackerel, may be cooked in fat, but care should be taken to avoid excessive greasiness. Smaller ones, like trout, are often pan-fried. Drain the fish well before serving.

Cooking Lean Fish

- Because lean fish has almost no fat, it can easily become dry, especially if overcooked. It
- is often served with sauces to enhance moistness and give richness.
- *Moist-heat methods.* Lean fish is especially well suited to poaching. This method
- preserves moistness.
- *Dry-heat methods.* Lean fish, if it is broiled or baked, should be basted with butter
- or oil. Take special care not to overcook it, or the fish will be dry.
- *Dry-heat methods with fat.* Lean fish may be fried or sautéed. The fish gains palatability
- from the added fat.

SHELLFISH

Are distinguished from fin fish by their hard outer shells and their lack of backbones or internal skeletons.



CLASSIFICATION

- **Mollusks**- are soft sea animals.

Categories:

Bivalves: which have pair of hinged shells

Ex: clams, oysters, mussels, scallops

Univalves: which have a single shell Ex: abalone, conch

Cephalopods: squids, octopus, cuttlefish.

- **Crustaceans** – are animals with segmented shells and jointed legs.



CLAMS



Hard shell clams or quahogs: These go by different names depending on size.

little necks: the smallest and tenderest, for eating raw or steam.

Cherrystones: med sized, most common, they can be eaten raw and good for steaming, a little tougher than little neck.

Chowders: largest also called quahogs. Tough they are chopped for cooking chowders.

Soft shell clams: these are sometimes called longnecks, because of the long tube that protrudes bet the shells, they have very thin shells that sometimes they don't close completely, also called steamers, because the usual way of cooking them is to steam.

MARKET FORMS:

- Live in the shell

CLAMS



Clams, clockwise from top left: steamers, littlenecks, cherrystones, chowder clams.

Opening Clams



(a) Examine the shell to see that it is tightly closed, indicating a live clam. Rinse the shell under cold, running water. Avoid jostling the clam too much, or it will “clam up” tighter.

Hold clam in left hand as shown (or in right hand if you are left-handed). Place the sharp edge of the clam knife against the crack between the shells.



b) Squeeze with the fingers of the left hand, forcing the knife between the shells.

Opening Clams



d) Open the clam and finish detaching the meat from the upper shell.



(e) Cut the muscles against the lower shell to loosen the clam completely. Discard the top shell. Remove any particles of shell from the clam before serving.

(c) Change the angle of the blade as shown in the illustration and slide the knife against the top shell to cut the adductor muscles (clams have two; oysters have only one). Be careful not to cut or pierce the soft clam.

- **MUSSELS:**



most common mussels resemble small, black, dark or dark blue clams. Their shells are not as heavy as clams. Their flesh is yellow to orange in color and firm but tender when cooked. Mussels are harvested worldwide. Green mussels are from new zealand and southeast asia.

MARKET FORMS:

- Live in the shell
- Shucked, fresh or frozen
- Packed in brine

- **OYSTERS:**



have rough, irregular shells, the bottom shell is slightly bowl shaped, top shell is flat.

The flesh is extremely soft and delicate and contains a high percentage of water. Available all year round.

VARIETY:

Eastern – known by many local names, depending on their place of origin.

Olympia – very small from the pacific coast.

Belon – european oyster, grown in North America. Shells are flatter than those of Eastern oyster.

Japanese or Pacific – large oyster from the pacific coast.

Opening Oysters



(a) Examine the shell to see that it is tightly closed, indicating a live oyster. Rinse the shell under cold, running water. Hold oyster in left hand, as shown. (Left-handers will hold oyster in right hand.) Hold the oyster knife near the tip as shown. Insert the knife between the

(b) Twist the knife to break the hinge.

Opening Oysters



(c) Slide the knife under the top shell and cut through the adductor muscle (which closes the shells) near the top shell. Try not to cut the flesh of the oyster, or it will lose plumpness. Remove the top shell.



(d) Carefully cut the lower end of the muscle from the bottom shell to loosen oyster. Remove any particles of shell from the oyster before serving.

- **SCALLOPS:**



- are almost always sold shucked. The only part we usually eat is the abductor muscle, which closes the shell, if live scallops in the shell are available, leave the orange crescent shaped coral attached to the abductor muscle when shucking. Creamy and white in color, available all year round.

Variety:

- Bay scallops – small with delicate flavor and texture, expensive.
- Sea scallops – larger not as delicate as bay scallops but still tender unless overcooked.

MARKET FORMS:

- Fresh, shucked.
- Frozen; IQF

- **CEPHALOPODS** : means head-foot referring to the fact that these animals have tentacles or legs attached to the head, surrounding the mouth.
- Most common cephalopods in food service are squid and octopus. Cuttlefish is similar to squid but is usually seen in limited market only.

- **Squid:**



- also called calamari, also classified as mollusks, they have no external shell, they are soft bodied animals somewhat resembling octopus, but they have ten

OCTOPUS:



It means eight feet, range size from less than ounce to a pounds. All sizes are firm textured, even chewy. Larger size consider too tough to eat.

CUTTLEFISH:



similar to a squid, has a shorter, thicker body, instead of a thin transparent interior quill, has a hard chalky cuttlebone.

Cleaning of Squid



(a) Pull off the head. The interior organs will come out with it.



(b) Pull off the skin.



(c) Pull out the plasticlike quill from the body sac. Rinse out the sac to clean it well.



(d) Cut off the tentacles just above the eyes. Discard the head and organs.

Cleaning of Squid



(e) Be sure to remove the hard beak, which is found at the center of the tentacle cluster, as shown by the tip of the knife in this picture.



(f) The body sac may be left whole for stuffing or cut into rings for frying, sautéing, or stewing.

CRUSTACEANS





Lobster

has a large flexible tail, four pairs of legs and 2 large claws. Its shell is dark green or bluish green, but turns red when cooked.

Meat from the tail, claws and legs is eaten. It is white and sweet distinctive taste. Claw meat is considered specially good.

The Coral (roe or eggs), which is dark green when raw and red when cooked. And the green tomalley (liver) in the thorax or body portion are also eaten.

Lobster are classified by weight;

Chicken – 1lb (450g)

Quarteres 1 1/4lb (575g)

Selects – 1 1/2lb to 2 1/4lb(675g-1025g)

Jumbos – over 2 1/2lb (1130g)

Yield – a 500g lobster yields about 125g cooked meat.

- **Market Forms: live, cooked meat, fresh or frozen.**

- **Checking Freshness:**

live lobster must be alive when cooked. This indicated by movement of the legs and claws and by tightly curled tail.

If the lobster is dead when cooked, the meat will fall apart. If alive, the meat will be firm and the tail will spring back when straightened.

sleepers, (dying lobsters) should be cooked immediately so that the meat will be usable.

cooked lobster meat (fresh or thawed) should smell fresh and sweet.

ROCK LOBSTER

Also known as spiny lobster or langoustes. They are warm water relative of lobster but have no claws.

Langoustines or langoustinos are smaller relatives of the rock lobster.

Splitting a lobster for



(a) Place the lobster on its back on a cutting board. With a firm thrust of a French knife, pierce the head.

(b) Bring the knife down firmly through the center of the lobster to split it in half.

Splitting a lobster for



(c) With the hands, crack the back of the shell of the lobster open.



(d) Pull out and discard stomach, a sac just behind the eyes.

Splitting a lobster for broiling



(e) If desired, remove the tomalley for use in the crumb stuffing.



(f) With a sharp blow of the back of the knife, crack the claws.

Splitting a lobster for broiling



(g) The lobster is ready for broiling. If it is broiled as shown, the end of the tail should be weighted down to keep it from curling.



(h) You may also split the tail all the way through and curl up the two sides as shown. In this position, weighting the tail is not necessary. Note that the claws have been broken off and placed beside the lobster.

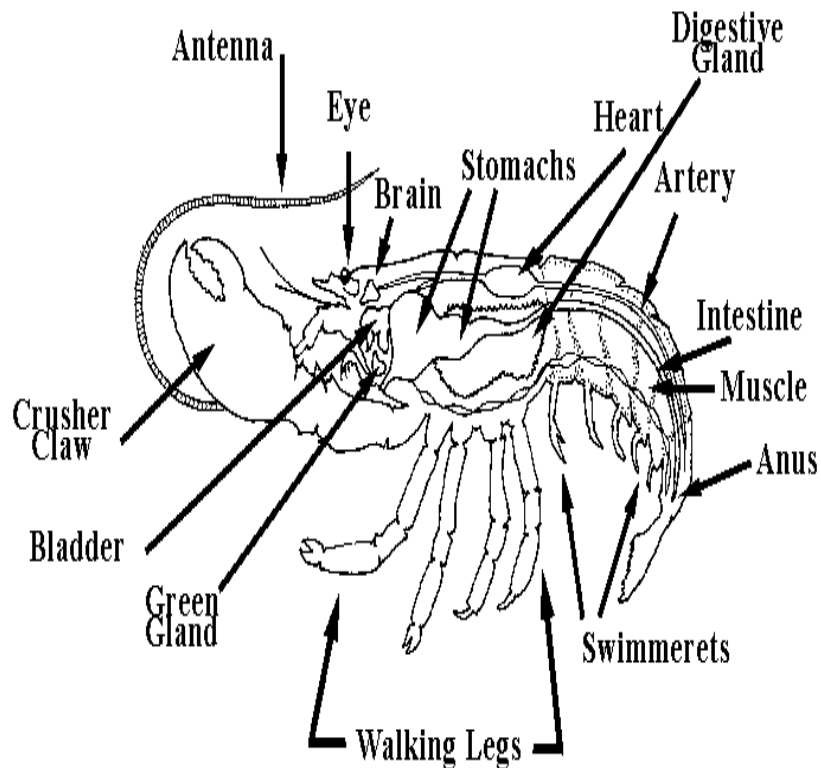
Cutting a lobster for sautés and stews



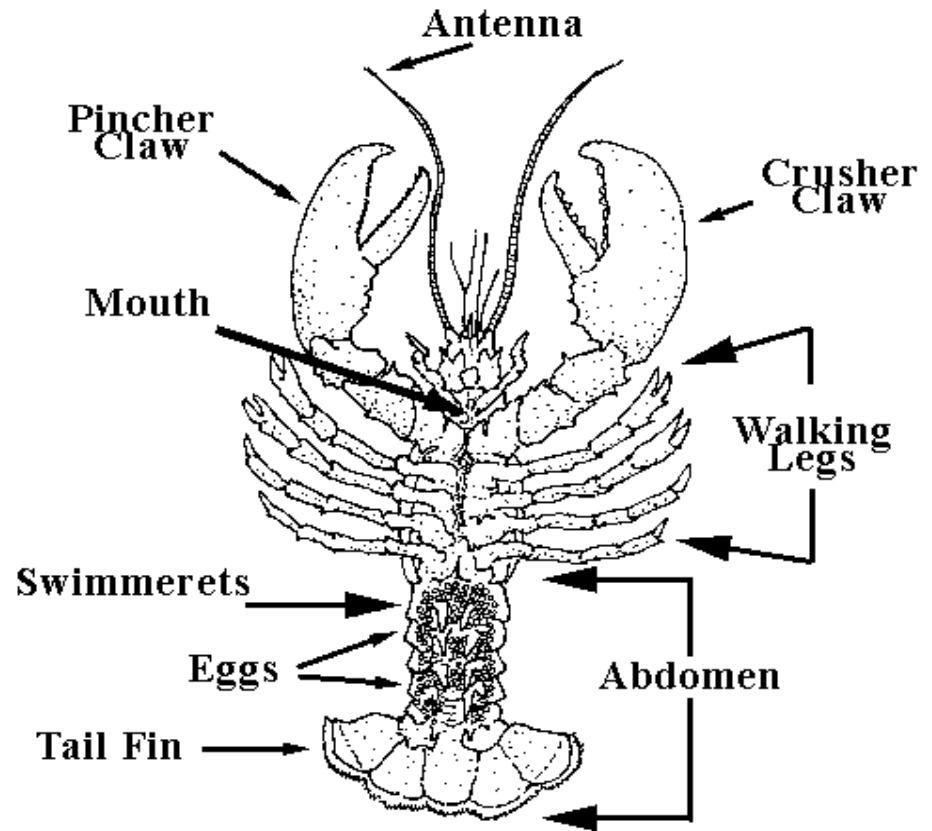
Cutting a lobster for sautéés and stews.



BODY PARTS OF LOBSTER

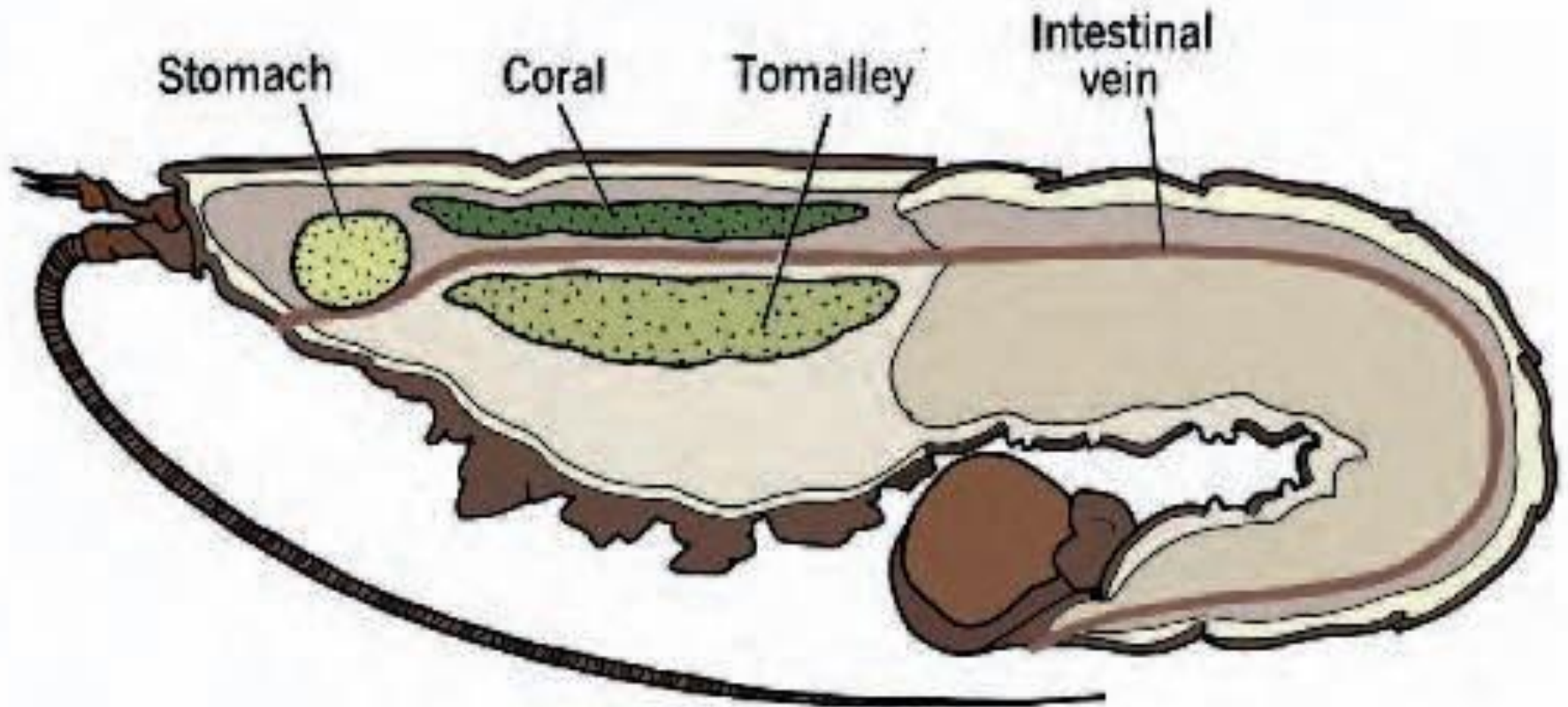


Lobster: Side View



Lobster: Bottom View

PARTS OF LOBSTER



- **CRABS:**

Alaskan king crab – largest of the crabs. Weighing from 2.7-9kg

Expensive, meat can be removed in large chunks.

Alaskan Snow Crab – smaller and cheaper than king crab

Dungeness of crab – west coast crab, weighing about 700g-1.8kg.

Blue Crab – Small crab, weighing about 5oz. Most common frozen crab meat is from blue crab.

Soft Shell crab – actually a molting blue crab, harvested before the new shell has hardened.



SHRIMPS: SHRIMP are small crustaceans that look somewhat like tiny, clawless lobsters.

Classification:

White shrimp / prawns



- Crayfish / Prawn mantis

