



Culinary Institute
of America

Clams, Mussels, Oysters, Shrimp, & Squid

Day 2



Learning Objectives

- Identify common shellfish species and their anatomical features.
- Demonstrate proper techniques for cleaning and fabricating clams, oysters, mussels, shrimp, and squid.
- Recognize quality indicators and signs of spoilage in fresh shellfish.
- Describe flavor profiles and textures typical of each species.
- Explain appropriate cooking methods for various shellfish.

Clams

- Shell made of two hinged parts (*bivalve mollusk*)
- Concentric rings
- Oblong egg shape
- Slightly pointed at the neck end
- Delicate, briny flavor
- Found burrowed sand in both fresh and salt water

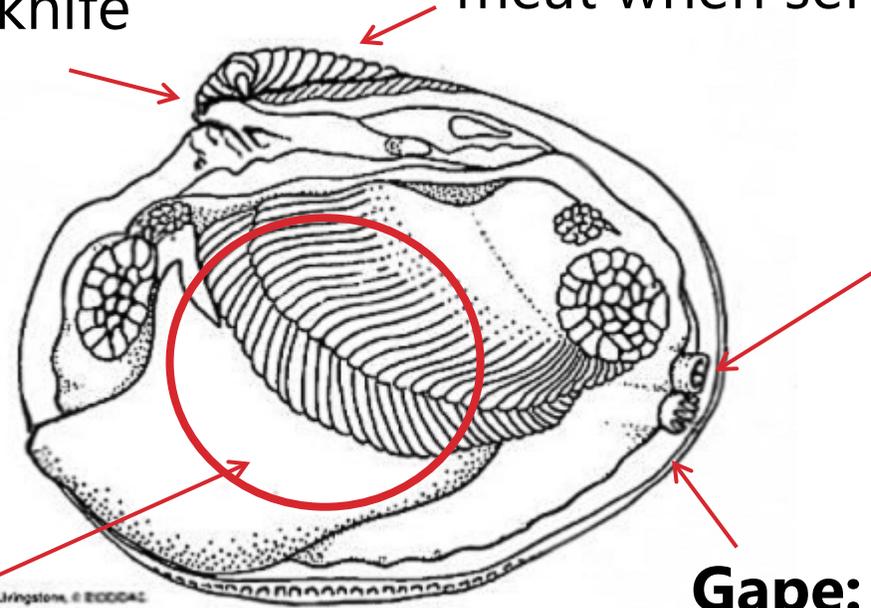


Clam Anatomy

Hinge: Joint where the shells connect. Entry point for the clam knife when shucking.

Shell (Top & Bottom):

Hard exterior. Bottom shell usually holds the meat when served raw.



Siphon (Neck): Tube-like filter. Often cleaned or trimmed, especially in steamers and soft-shells.

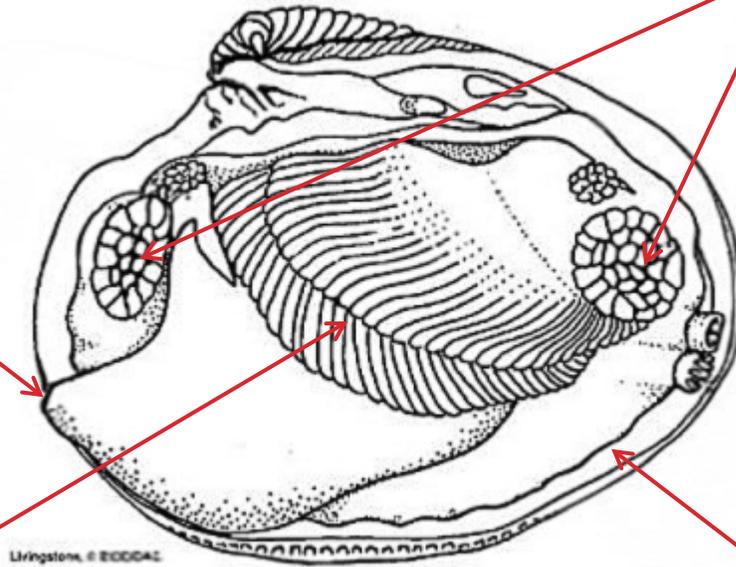
Clam Belly: Soft center with rich flavor. Includes all internal organs.

Gape: Natural shell opening for siphon. A clam that closes when tapped is alive. If it stays open, discard.

Clam Anatomy

Foot: Small digging muscle. Chewy, often seen in whole cooked clams.

Gills: Edible feathery organs inside the belly. Help the clam breathe and filter food from the water.



Adductor Muscles: Holds the shell closed. Must be cut when shucking. Edible and adds texture.

Mantle: Thin lining inside the shell. Edible, often trimmed for appearance.

Clam Fabrication

1. Insert the clam knife into the curve near the hinge.
2. Snap your wrist upward to pop the shell and release the muscle.
3. Slide the knife along the top shell to separate the meat.
4. Run the knife under the clam to release it from the bottom shell.
5. Inspect for any shell fragments before serving.



Cooking Methods for Clams

Steaming:

Most common method; clams open naturally and retain their briny liquor

Sautéing:

Often used after steaming; adds aromatics, butter, and wine for flavor

Baking:

Dry heat browns toppings; keeps meat tender

Frying:

Typically for shucked clams; creates a crisp exterior with tender interior

Grilling:

Whole clams grilled in-shell; adds smoky flavor and visual appeal

Oysters

- Shell made of two hinged parts (bivalve mollusk)
- Deep, irregular shell with rough texture
- Distinct left (cupped) and right (flat) valves
- Concentric growth rings
- Usually oval or teardrop shaped
- Found attached to rocks or other oysters in saltwater environments
- Commonly raw, grilled, baked, fried, or steamed



Oyster Anatomy

Left Valve: The larger, deeper shell, usually on the bottom when the oyster rests.

Umbo: Oldest part of the shell, near the hinge; adds structure.

Liquor: Natural briny juice; keeps oyster moist and flavorful.

Right Valve: Flatter, smaller shell, usually on top; protects with left valve.

Hinge: Where the two shells join, near the umbo.



Oysters Anatomy

Gill: Edible, feathery organ that filters food and helps the oyster breathe.

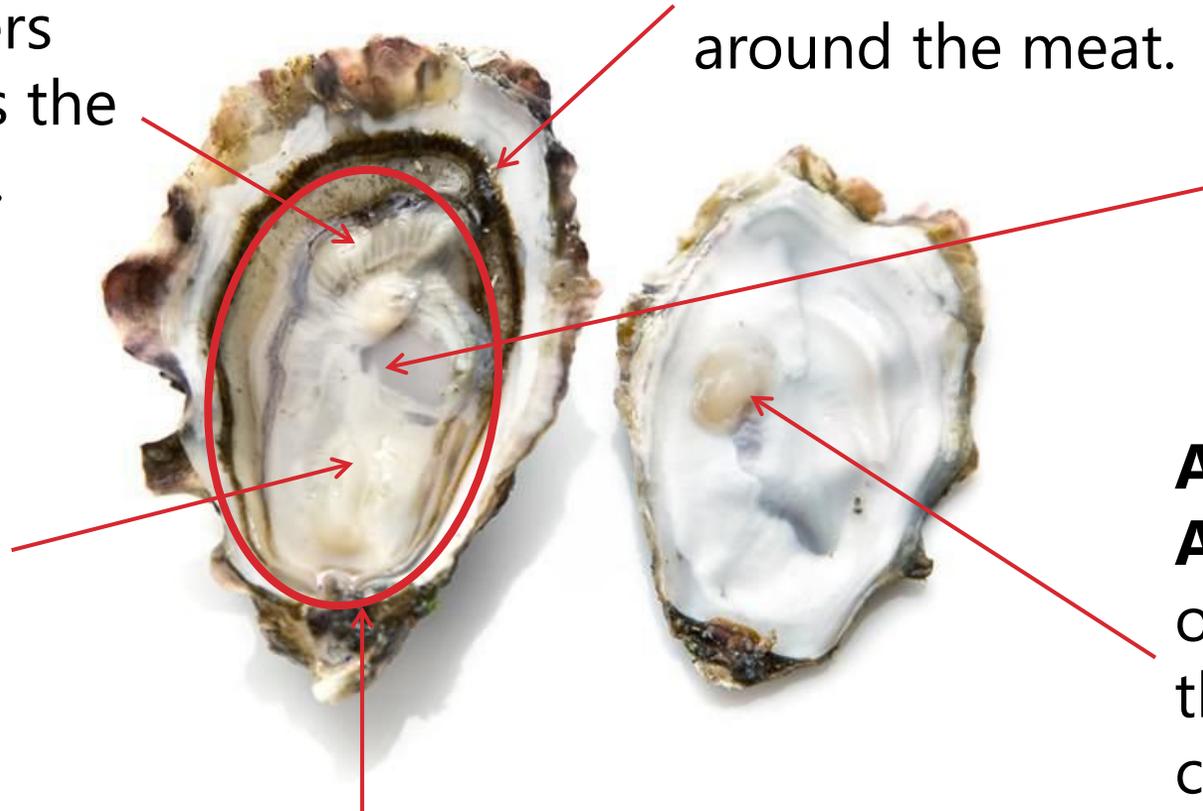
Mantle: Thin edible membrane around the meat.

Adductor Muscle: Holds shell closed; cut to release the meat.

Belly: Soft central part of the oyster, rich in flavor and texture.

Adductor Attachment: Mark on the shell where the muscle was connected; cut here to free the oyster.

Oyster Meat: Main edible part, including soft body and gills.



Oyster Fabrication

1. Hold the shell in your palm and insert the oyster knife tip into the hinge.
2. Snap or push the knife down, using the bottom shell for leverage, until it opens.
3. Slide the knife along the top and bottom shells to release the meat.
4. Check for shell fragments, then release the meat and serve immediately.



Cooking Methods for Oysters

Raw (half shell):

Served chilled with mignonette or lemon; highlights freshness

Grilling/Broiling:

Cooked in-shell with butter or sauce until lightly charred and bubbling

Baking:

In-shell with toppings; gentle heat enhances flavor

Frying:

Shucked oysters breaded and deep-fried; crispy outside, creamy interior

Steaming:

Gently opens shells while keeping moisture and flavor intact

Mussels

- Shell made of two hinged parts (bivalve mollusk)
- Smooth, dark blue-black to brown shell
- Elongated, oval or wedge shape with pointed end
- Concentric growth rings visible
- Mild, briny flavor
- Found in saltwater and freshwater, often on rocks or pilings

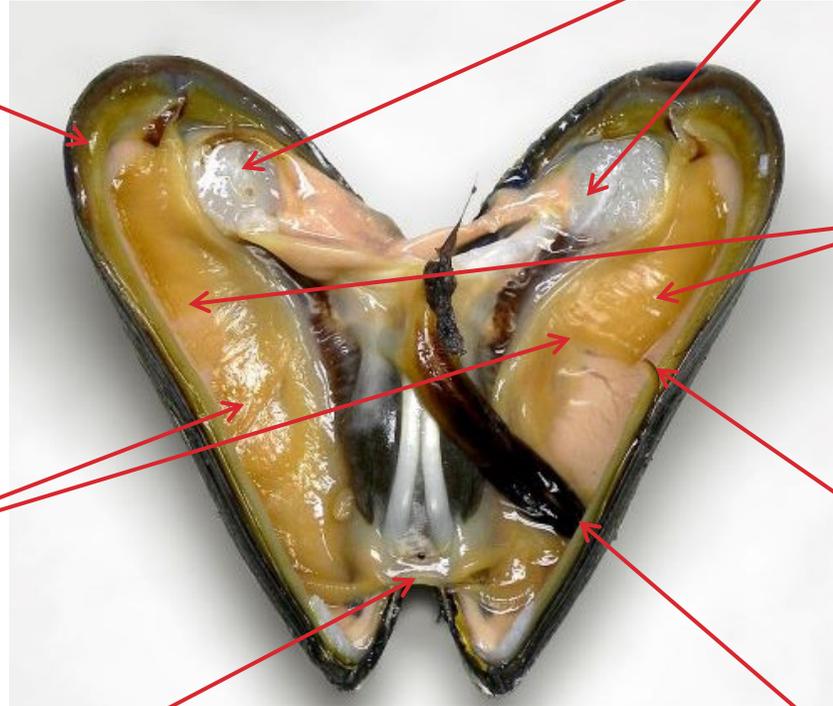


Mussel Anatomy

Liquor: Natural juices inside the shell, adding flavor to the mussel.

Meat (Belly): Main edible part; includes digestive organs and gills.

Mantle: Thin membrane lining the shell; edible.



Adductor Muscle: Small muscle that closes the shell; cut or torn when cooking or shucking.

Gills: Filter food and aid breathing; edible.

Beard (Byssus Threads): Fibrous strands mussels use to anchor to surfaces; removed before cooking.

Foot: Small muscle used for movement; edible.

Mussel Anatomy

Siphon: Tube-like structure mussels use to draw in and expel water. Edible.



Hinge and Beak: The hinge is where the shells connect; the beak is located to one side of the centerline.

Shell (Top & Bottom): Hard, oblong shell that protects the meat; bottom usually cupped.

Mussel Fabrication

1. Scrub mussels under cold running water to remove dirt and debris.
2. Pull out the beard (byssus threads) by tugging firmly toward the hinge.
3. Discard any mussels that are cracked, broken, or remain open when tapped.
4. Steam or prepare as desired until shells open.
5. Use a small knife or spoon to detach meat from the shell. Discard unopened mussels after cooking.



Cooking Methods for Mussels

Steaming:

Most common method; gently opens shells while preserving moisture and briny flavor

Sautéing:

Cooked quickly with oil or butter; often done after steaming to build flavor

Simmering:

Gently cooked in broth or sauce; mussels absorb flavor as they open

Grilling/Broiling:

Cooked in-shell over high heat; adds smoky flavor and visual appeal

Baking:

In-shell with toppings; dry heat browns surface while keeping meat tender

Shrimp

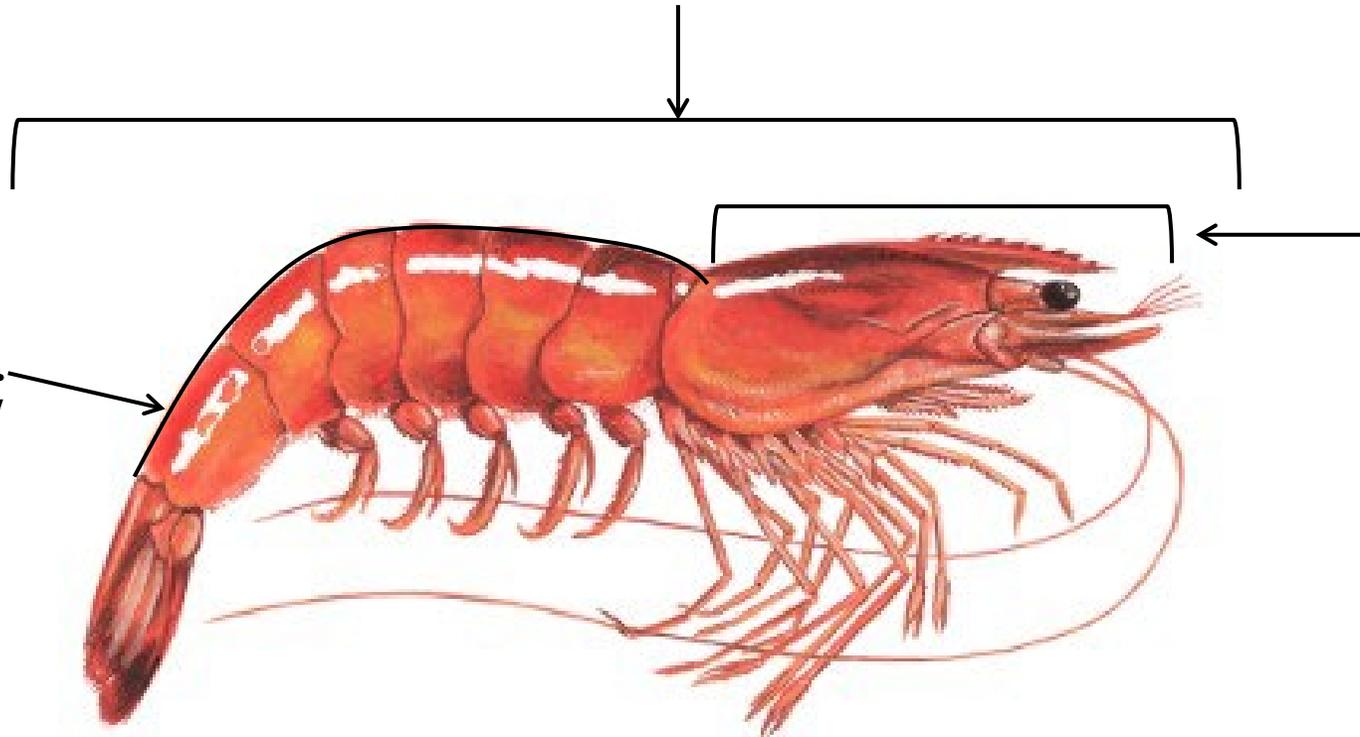
- Long, curved body with segmented shell and tail fan
- Shell color: gray, pink, or brown; turns pink when cooked
- Mild, sweet, slightly briny flavor
- Firm, tender texture when cooked properly
- Found in salt and freshwater
- Commonly sautéed, grilled, boiled, fried, or poached



Shrimp Anatomy

Shell: Hard outer covering over the entire shrimp; peeled before or after cooking.

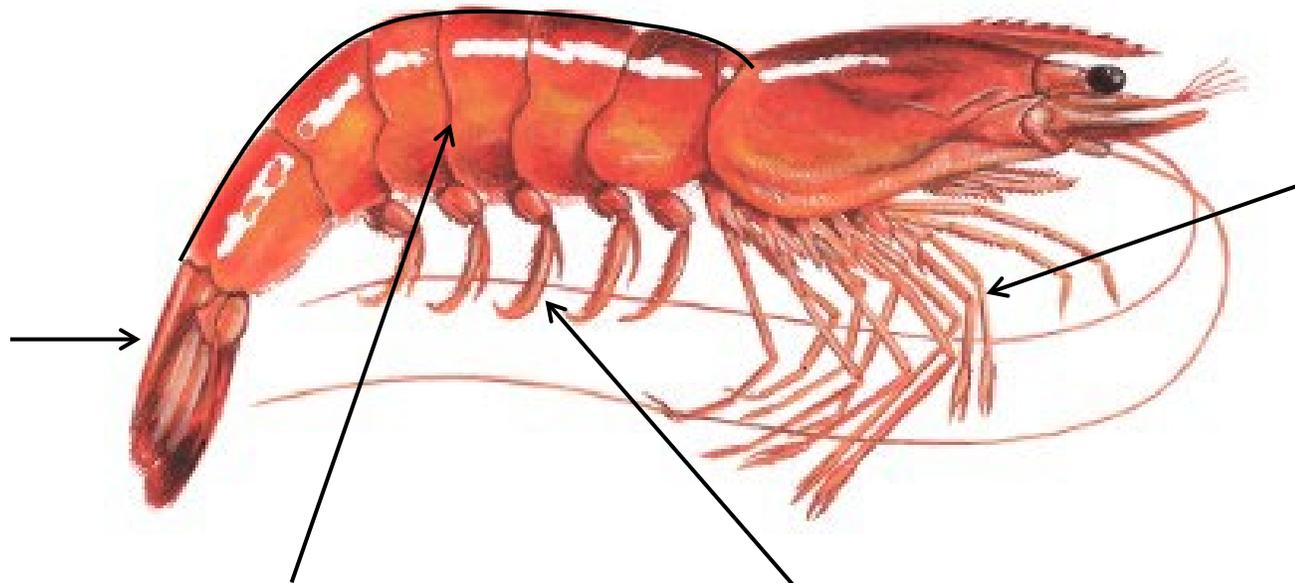
Vein: Dark line along the back under the shell; removed by deveining.



Head and Chest: Includes compound eyes, antennae, and mandibles. Flavorful; often removed but used for stocks and sauces.

Shrimp Anatomy

Tail: Contains little meat; left on for presentation or removed.



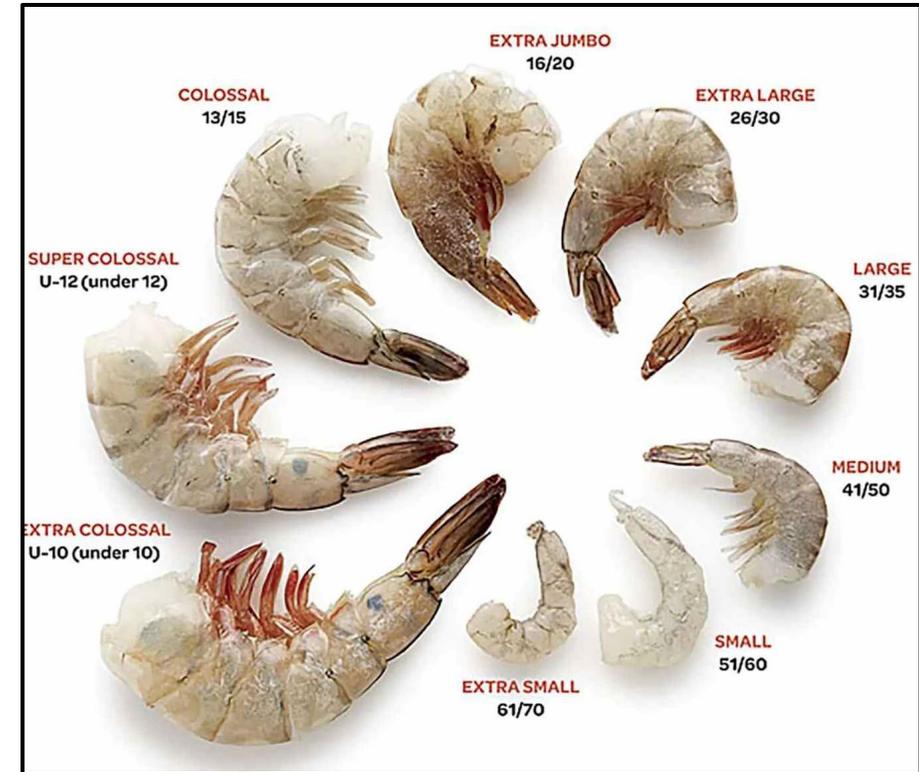
Abdomen: Main edible portion; firm and sweet.

Swimmerets (Pleopods): Fanned legs under the abdomen; removed during shelling.

Walking Legs (Pereiopods): Under the head; discarded with the shell.

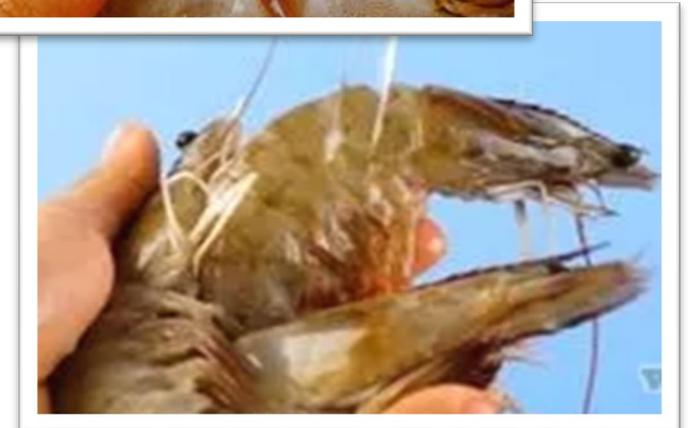
Shrimp Sizes

Size Name	Count per #	Common Use
Colossal	U/10	Impressive plating, grilling
Jumbo	11–15	Shrimp cocktail, skewers
Extra Large	16–20	Sautéing, pasta dishes
Large	21–25	Stir-fries, shrimp scampi
Medium	26–30	Soups, curries, tacos
Small	31–40	Fried rice, dumplings
Extra Small	51–70+	Salad toppings, shrimp spreads



Shrimp Fabrication

1. Hold the shrimp in one hand and a paring knife in the other.
2. Grip one side of the legs with thumb and forefinger; peel shell over the back in one motion.
3. Hold the tail and pull it straight off.
4. Make a shallow cut just below the vein at the head end.
5. Cut down the back to the tail; pinch or pull out the vein to remove.



Cooking Methods for Shrimp

Grilling/Broiling:

High heat adds char and smokiness; ideal for skewers or shell-on shrimp

Sautéing:

Quick-cooked in oil or butter; highlights shrimp's sweet flavor and firm texture

Boiling:

Fast and efficient; often used for shrimp cocktail or seafood boils

Frying:

Battered or breaded and deep-fried; crispy outside, juicy inside

Poaching:

Gently cooked in seasoned liquid; keeps shrimp tender and moist

Squid

- Elongated body (mantle) with 8 arms and 2 long tentacles
- Clear internal shell (pen)
- Mild, slightly sweet flavor
- Firm, chewy texture; tender when cooked quickly or slowly
- Ink sac used in specialty dishes
- Saltwater species, common in coastal waters
- Often grilled, fried, stuffed, or braised



Squid Anatomy

Head: Removed during cleaning; discarded.

Eye: Inedible; removed with the head.

Sucker: On arms and tentacles; edible.

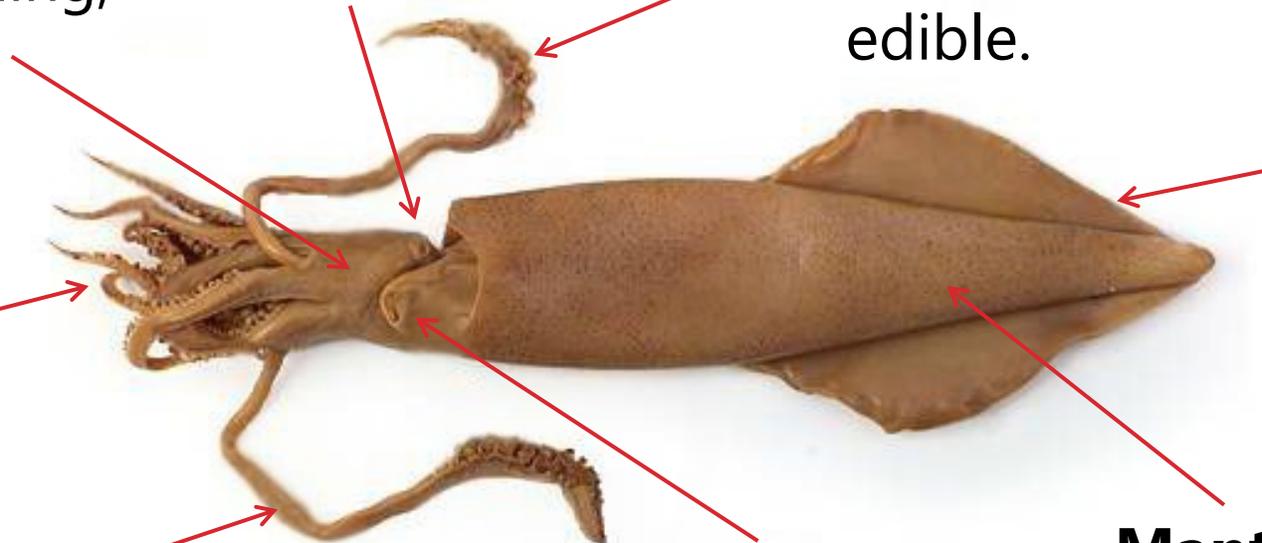
Fin: On top of the mantle; edible, slightly firmer texture.

Arms: Shorter limbs with suckers; edible.

Tentacle: Longer pair used for grabbing; edible, often grilled or fried.

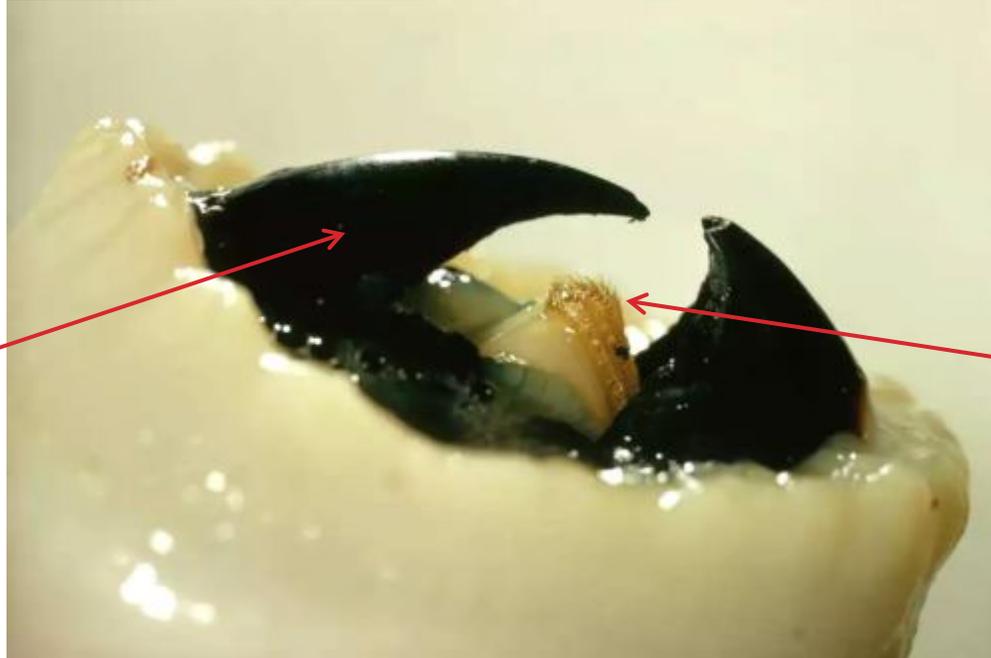
Siphon: Assists in movement; edible.

Mantle: Main edible part; sliced into rings or stuffed.



Squid Anatomy

Beak: Hard mouthpart at the center of the arms. Inedible and removed during cleaning.



Radula: A tiny, toothed ribbon inside the beak used to scrape and tear food; inedible and removed with the beak during cleaning.

Cooking Methods for Squid

Grilling:

Quick, high heat method; adds char and keeps squid tender when not overcooked

Braising:

Slow-cooked in liquid; ideal for tenderizing larger squid in stews or sauces

Sautéing:

Fast cook in a hot pan; prevents toughness and enhances flavor with aromatics

Stuffing & Baking:

Whole mantles filled and baked gently; keeps moisture in and flavors balanced

Frying:

Commonly breaded and deep-fried as rings or tentacles; crisp outside, tender inside

Squid Fabrication

1. Pull head and tentacles from the mantle; remove the plastic-like quill.
2. Cut below the eyes to separate head from tentacles; discard head, keep tentacles.
3. Rinse squid and tentacles in cold water or under running water.
4. Peel or scrape off the dark outer skin from the mantle.
5. Remove internal shells from mantle; rinse thoroughly to clean.



Characteristics of Quality Shellfish

- **Shrimp:** fresh, clean aroma, not discolored or slimy
- **Mussels and clams:** tightly closed
- **Oysters:** alive, tightly closed
- **Scallops:** plump, white, and very moist
- **Lobster:** alive
- **Crabs:** clean, moist shell, legs intact, weight matches body
- **Squid:** smell briny, not fishy





Pacific Blue Mussels



Kona Crab



'Opihi



Kauai Shrimp



Aori 'ika



Kualoa Ranch Oysters



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Any Questions?