Fish Morphology Presentation

The presentation contains links that will quickly navigate you through the different sections.
Fish Morphology

Salmon Anatomy: Survival Adaptations

Courtesy of Columbia River FWCO Information and Education, 2022
Select an adaptation below to learn more

Body Shape
Tail Shape
Color Pattern
Mouth Shape
Teeth and Gill Rakers

Courtesy of Columbia River FWCO Information and Education, 2022
Body Shape Adaptations
Click on an adaptation below to learn more

- Fusiform
- Globiform
- Ribbon
- Compressed
- Depressed (Flat)

Courtesy of Columbia River FWCO Information and Education, 2022
Body Shape - Fusiform

- Streamlined and torpedo shaped
- Fast swimmers

Examples
- Marlin
- Anchovy
Body Shape - Ribbon

- Elongated; snake-like
- Hides in small cracks and crevices to ambush prey

Examples
- Eels
- Sand lance

European Eel

Side view

Front view

Courtesy of Columbia River FWCO Information and Education, 2022
Body Shape – Depressed

- Flattened (top to bottom)
- Common in bottom dwelling fish

**Examples**
- Rays
- Halibut

Electric Ray

Side view

Front view

Courtesy of Columbia River FWCO Information and Education, 2022
Body Shape - Globiform

- Rounded
- Slow swimmers

Examples
- Pufferfish
- Boxfish

Yellow Boxfish

Side view
Front view

Courtesy of Columbia River FWCO Information and Education, 2022
Body Shape – Compressed

- Compressed (side to side)
- Maneuverable; able to make quick, sharp turns

Examples
- Tang
- Crappie
Tail Shape Adaptations
Click on an adaptation below to learn more

- Lunate
- Rounded
- Forked
- Squared
- Tapered

Main Menu

Courtesy of Columbia River FWCO Information and Education, 2022
Tail Shape – Lunate

- Crescent shape
- Fastest swimmers

Examples
- Swordfish
- Mako shark

Sailfish

Courtesy of Columbia River FWCO Information and Education, 2022
Tail Shape – Forked

- Moderately fast swimmer
- Able to swim continuously over long distances

Examples
- Menhaden
- Pilot fish

Atlantic Mackerel
Tail Shape – Squared

- Maneuverable swimmer
- Bursts of speed over short periods of time to escape predators
- Less drag than “rounded” shape

Examples
- Salmon
- Rockfish
Tail Shape – Rounded

- Sharp turns and quick starts to evade predators
- Creates drag causing fish to tire easily

**Examples**
- Clownfish
- Goby
Tail Shape – Tapered

- Slow swimmers
- Swims by making a wave-like motion with its body

Examples
- Grenadiers
- Large-eyed rabbitfish

Moray Eel

Courtesy of Columbia River FWCO Information and Education, 2022
Color Pattern Adaptations

Click on an adaptation below to learn more

Camouflage

Advertising

Deceiving

Disruptive

Countershading

Courtesy of Columbia River FWCO Information and Education, 2022
Color Pattern – Camouflage

- Match surroundings to blend in and hide
- Used by both prey fish and ambush predators

Examples
- Green Clown Goby
- Large-eyed rabbitfish
Mandarinfish

- Warning to stay away from poisons or spines
- Attract mates, defend territories, clean other fish

Examples
- Hawaiian Cleaner Wrasse
- Squarespot Anthias
Color Pattern – Disruptive

- Spots, stripes, and patches of color breakup and diffuse the actual outline
- Irregular patterns with contrasting colors

Examples
- Moorish Idol
- Blackbanded Sunfish
Color Pattern – Deceiving

- Resembling an object or fish that is not of interest to a predator
- Markings that confuse predator

Examples
- Ambon Damselfish
- Saddle Butterflyfish
Color Pattern – Countershading

• Resembling an object or fish that is not of interest to a predator
• Markings that confuse predator

Examples
• Whale Shark
• Atlantic Herring

Atlantic Tarpon
Mouth Shape Adaptations

Click on an adaptation below to learn more

Superior

Terminal

Inferior

Elongated

Protruding

Main Menu

Courtesy of Columbia River FWCO Information and Education, 2022
Mouth Shape – Superior

- Upturned
- Suggests surface feeder; waits for prey to appear above them

Examples
- Lionfish
- Stonefish

Arowana

Courtesy of Columbia River FWCO Information and Education, 2022
Mouth Shape – Terminal

- Middle of head; points forward
- Feed on organisms floating in water column

Examples
- Blue Spotted Jawfish
- Blue Gourami

Humphead Wrasse

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Mouth Shape – Inferior

- Downturned
- Suggests bottom-feeder

Examples
- Honeycomb Cowfish
- Channel Catfish

Gray Atlantic Sturgeon
Mouth Shape – Protruding

- Extends reach
- Creates vacuum to suck up prey

Examples
- Slingjaw Wrasse
- Carp

Tilapia
Mouth Shape – Elongated

- Elongated jaws can reach into crevices and holes
- Can be used to dig for prey or scoop from surface

Examples
- Butterfly Fish
- Atlantic Needlefish

Alligator Gar

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Teeth and Gill Raker Adaptations

Click on an adaptation below to learn more

- Pointed Teeth
- Tooth Plates
- Beak-like Teeth
- Comb-like Gill Rakers
- Large, Course Gill Rakers

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Teeth Shape and Size – Pointed

- Eats other fish
- Designed to puncture, hold or cut prey

Examples
- Anglerfish
- Lingcod

Payara
Teeth Shape and Size – Tooth Plates

- Feeds on shelled animals
- Uses tooth plates to crush shells to get the meat inside

Examples
- Freshwater Drum
- Bat Ray

Sheephead Wrasse

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Teeth Shape and Size – Beak-like Teeth

- Crush prey items
- Feeds on organisms such as plants or coral

Examples
- Pufferfish
- Parrotfish

Bumphead Parrotfish

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Gill Raker Size and Shape – Comb-like

• Efficient at filtering tiny prey

Examples
• Candy Darter
• Sardine

Gill Rakers from American Shad

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Gill Raker Size and Shape – Large, Course

- Protects gills when they eat from large prey items

Examples
- Grouper
- Bowfin

Gill Rakers from Orange Spotted Grouper

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