

Mystery Fish Teaching Unit Overview and Fish Background Information

(Grades 3-5, Age 8-10)

Program Description

What if your students woke up one morning and discovered they had fins and scales? Which ocean habitat would they call "home?"

Help them discover the answer to these and other fish mysteries through the aquarium's Ocean Explorer Mystery Fish teaching unit. The unit integrates a field trip to the aquarium and pre-visit and post-visit classroom activities.

Before their field trip, students investigate fish habitats and adaptations.

When your class arrives at the aquarium for their reserved Ocean Explorer Mystery Fish program, an aquarium educator will help students and chaperones begin a focused, on-their-own data gathering investigation of fish in aquarium exhibits. While making observations, students note the physical and behavioral adaptations of fish and the habitats where they live.

When they return to school, they share the information they gathered at the aquarium as they create fish poetry and design a mystery fish.

This program is an entire unit of study for your students that includes pre- and post-visit classroom activities plus the Group Exploration Guide to be used during your visit. The entire set of activities, California Science Standards and background information about fish can be found on the aquarium's web site at http://www.mbayaq.org/lc/teachers_place/activity_fish_mystery.asp

While the teaching unit is designed for school groups who have reserved a Mystery Fish program at the aquarium, families and teachers and students who do not visit the aquarium may use this unit to learn more about fish.

Activity Descriptions

- [Mystery Fish Group Exploration Guide](#)
Chaperones use the Group Exploration Guide to record student observations during

their focused aquarium visit. At the Outer Bay and Kelp Forest exhibits, they compare the characteristics and behaviors of two fish: the tuna and sheephead. Students then encounter the "mystery fish" and try to determine which habitat is its home.

- [De-code a Fish](#): Students become detectives and use clues to decipher how the body parts of a fish impact its ability to move, find food and protect itself.
- [Fishy Habitats](#): Students investigate fish and their habitats. They use what they've learned to match different fish with a habitat where the fish can survive.
- [Mystery Fish Poetry](#): Students make observations of fish and create Venn diagrams to compare fish that live in different habitats. They use their information to create diamante fish poems.
- [Design a Mystery Fish](#): Students choose ocean habitats and design mystery fish using information they have compiled about fish and fish habitats. They create clues to help classmates figure out where the mystery fish live.
- [What's in a Name?](#): Using a prefix and suffix chart, students "translate" the scientific names of specific fish and create drawings based on the "translations."
- [If I Were a Fish](#): This culminating activity encourages students to include all they have learned about fish characteristics, behaviors, habitats and conservation in a creative story. Using their handprint or footprint as an outline, they draw fish to illustrate their stories.

California State Content Standards

<http://www.cde.ca.gov/be/st/ss/>

Find standards for grades 3-5 in specific content areas on this web site.

Science

English Language Arts

Mathematics

History – Social Science

Visual and Performing Arts

Suggested Uses of Activities

Activity	Pre-visit	At the Aquarium or in the Classroom	Post-visit
Mystery Fish Exploration Guide		X	X
De-code a Fish	X	X	
Fishy Habitats	X	X	
Mystery Fish Poetry		X	X
Design a Mystery Fish		X	X
What's in a Name			X
If I Were a Fish		X	X

Activity ResourcesMonterey Bay Aquarium Web Site

Live Web Cams

Students can watch and observe sharks and many different kind of fish on our live Kelp Forest and Outer Bay web cams.

http://www.mbayaq.org/efc/cam_menu.asp

Animal Fact Cards

Printable animal fact cards including fish in several different habitats.

http://www.montereybayaquarium.org/lc/activities/critter_cards.asp

Online Field Guide

Online field guide of marine animals with photos, diet, range, habitat and conservation notes.

http://www.montereybayaquarium.org/efc/living_species/default.asp

Fish Videos

Short clips to watch online from our Video Library.

http://www.montereybayaquarium.org/efc/video_library/video_library.aspx

Sea Searcher's Handbook

The "Fishes" chapter includes background information about how fish are adapted for specific habitats.

http://www.mbayaq.org/lc/teachers_place/resources_seasearchers.asp

External Link

FishBase is a global information system on fish. The web site has information about 28,500 fish, including common and scientific names and photos. Take a Fish Quiz!

www.fishbase.org

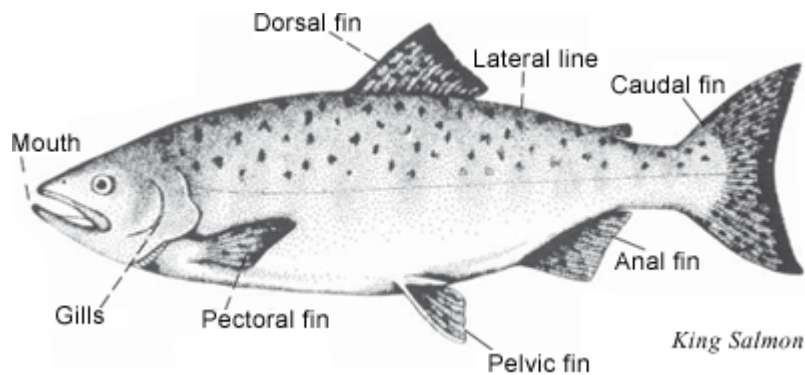
Fish Background Information Sheet

Fish are vertebrates, animals with backbones. **Most** are cold-blooded animals that live in either fresh water or sea water. The temperature of the water determines the temperature of their blood and tissue. However, large, active fish, such as tuna and some pelagic fishes, can maintain a higher internal body temperature than the water. Their dark swimming muscles are warmer than their surface tissues.

Fish have skeletons made of different materials. The skeletons of most fish are made of bone. Sharks and rays have cartilaginous skeletons made of calcium phosphate and other minerals. The cartilage strengthens their body frames and makes them very flexible, agile and lighter in weight than bony fish.

Instead of lungs, fish have gills for breathing. Fish take water in through their mouths. As the water passes over the gills, oxygen from the water is absorbed into the fish's blood stream.

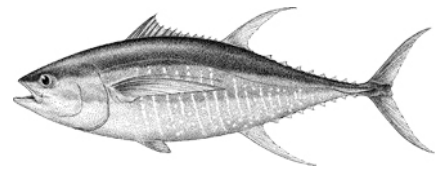
Most bony fish have gas-filled swim bladders for buoyancy. In contrast, sharks have very large livers filled with fatty oil (squalene) that help keep them from sinking.



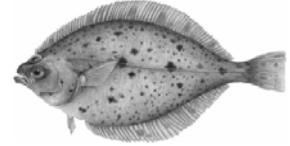
Fins serve many functions. Pectoral and pelvic fins are used for steering, balance and braking. Dorsal fins (located on the back) keep fish from rolling over in the water. The tail or *caudal* fin helps fish move in their habitats. Fast swimming fish have narrow forked tails that provide the thrust needed to speed through the water. Slower swimming fish have a wide, square shaped tail that helps them swim around rocks or reefs and catch prey. Some fish have very long tail fins which they use to hit their prey. Others, such as the angel shark, have an unusual tail fin. The lower lobe is longer than the upper lobe.

Colors and patterns of fish may disguise them in their habitats. Stripes, spots and coloration can help fish camouflage and avoid predators. Some colors, such as yellow or orange, are a warning that the animal is poisonous. In addition, bright colors "disappear" in the ocean depth, allowing the fish to blend in with their surroundings. False "eyespot" located on a fish's body might confuse potential predators. Fish with counter-shading are dark on the top or dorsal side of their bodies and lighter underneath on the ventral side. This makes them more difficult for predators to see when looking down on them from the surface or looking up from the ocean depths.

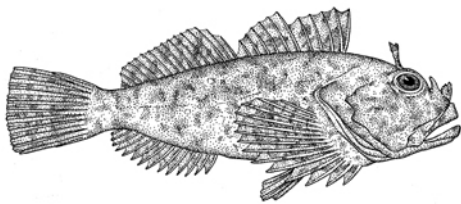
The shape of a fish helps it hunt for prey and avoid predators. A torpedo-shaped body increases a fish's swimming speed. Most fish with this fusiform shape live in open water and are excellent swimmers. Elongated-shaped fish hide under or wrap around rocks or coral. Flatfish have flattened bodies.



They lie on their sides on the seafloor with only their eyes protruding from the sand, hiding until their prey swim nearby.



The position of a fish's eyes identifies where it spends most of its time. When a fish has one eye on each side of its body, it usually swims in the water column and above the seafloor. If both eyes are on top of its head or if both eyes are on one side of its head, it stays on or near the bottom. The eyes of some species look upward while others look downward. This helps them find prey or sense predators above or below their body. Some fish living in deeper water



have very large eyes to give them maximum light-collecting ability in low-light areas. Other pelagic fish have very small or no eyes because they live in permanent darkness. A fish's vision is very limited or non-existent in the deep ocean; therefore, it uses other senses or adaptations for finding prey and avoiding predators.

The design and location of a fish's mouth indicates how it obtains food. If the mouth is on the underside of its body, it feeds on the bottom in sand or mud. When a fish's upturned mouth is slanted toward the top of its body, it's a surface feeder. If it has a big, wide mouth, it gulps its food. Reef fish with long, skinny "noses" probe the coral crevices for prey items.



Some fish have teeth of various shapes and sizes. Fish with tiny teeth nibble, while some shark species have rows of sharp teeth that bite and tear. Parrotfish have strong jaws that scrape and crunch coral to consume the zooxanthellae (algae) within.

Fish reproduce in a variety of ways. Some lay eggs, some brood eggs (sit on the eggs until they hatch) and some give birth to live young.



Parrotfish



Sanddab