Living Coast Discovery Center
Virtual Field Trip Resource Packet

Fish Dissection

In this packet you will find lessons and resources related to your Living Coast virtual field trip. The first two activities are intended to bookend your virtual trip, followed by additional resources.

Here is the link to our virtual field trip playlist:
https://youtu.be/7kEgJyKGVnU

Table of Contents

Other Resources

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Fishy Findings

Lesson Objectives:

- Students will be able to define adaptation
- Students will be able to identify a fish by its traits

Standards:

- **4-LS1-1** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- **4-LS1-2** Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

Materials:

- Worksheet "Fishy Findings"
- Fish Video: https://www.youtube.com/watch?v=U_3jpc4gmg0

Outline:

For their field trip, students are going to get to watch a fish dissection. Before we can do that, we're going to learn about what kinds of animals fish are and what adaptations they have. An adaptation is something an animal has on/in its body or something it does that helps it to survive. While there are many animals that live in the ocean, not all of them are fish! A fish has: gills to breathe underwater, cold blooded, fins and a backbone. Many, but not all, fish have scales.

Have students watch the video. They need to choose one fish to focus on for the worksheet.

Worksheets:

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Fishy Findings

Directions: You are a Biologist studying the habitat you see before you. Find one fish to observe closely. Pay attention to where your fish is in its habitat, what it's doing and what body parts it's using to do those things.

Biologist Name:_____ Fish Species (if known):_____

Draw the fish you observed in the box above. Be as detailed as you can.

What were two things you observed your fish doing?

_____

_____

What body parts did you observe your fish using to do these things?

_____

_____

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Fish By Design

Lesson Objectives:

- Students will be able to name 3 structures that a fish has, and explain how those structures help a fish survive in its habitat.

Standards:

- **4-LS1-1** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- **4-LS1-2** Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

Materials:

- Fish By Design Worksheet
- Fish Example Worksheet
- Paper/Pencil

Outline:

Review the structures and functions that students learned about on the field trip. Today, students are going to be genetic engineers! Genetic engineers modify organisms by manipulating their genetic material. Your genetic material is your DNA – what you inherit from your parents that affect the way you look and how your body works. Their job is to choose a habitat and create a fish that is perfectly designed to survive in that habitat.

Worksheets:

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FISH BY DESIGN

Background:

Biologists have just discovered how to genetically engineer animals to make them perfect for their habitat. You are one of these biologists. You have been assigned to create a new type of fish that will be perfectly designed to survive in its habitat.

Assignment:

Pick one of the habitats below and design the best fish for that habitat. Your fish will need to be strong and resilient enough to survive in its new home. You need to think about HOW it will defend itself, WHAT it will eat, and HOW it will move to get food. Use the Design Plans document to create your new species. Your fish must include **at least three** external anatomy structures covered in the dissection.

Habitats:

1. **Lake**

   This lake is rich in a wide variety of plant and animal species. Many plants grow under and above the surface of the clear water attracting insects. Other animals that can be found here are frogs, small schooling fish, and trout.

2. **River**

   This river is in a warm, tropical climate. It has cloudy water, with much insect activity. The insects draw schools of small fish close to the surface to feed, exposing them to predators. These fish are fast and know that small, rocky spaces can be used to hide. Some local animals include catfish, and eels.

3. **Ocean bottom**

   This habitat has cool water with flat, sandy floors. Patches of kelp forests host much animal activity. Many insect and crab species can be seen hiding near shells or burrowing into the sand for shelter. Other local animals include stingrays, small sharks, lobsters and schooling fish.

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Design Plans: New Fish Species

Biologist Name:_____ Habitat Chosen:_____

Draw your new fish species in the box above. Show your fish's shape, fins and colors.

Species Name: (create a name that tells something about your fish)

_____

Swimming: (how your fish swims; based on tail and body shape)

_____

Eating: (how and what your fish eats; based on its mouth shape and location)

_____

Defense: (how your fish defends itself from predators)

_____

Location: (does your fish live at the bottom of deep water, shallow water, etc.)

_____

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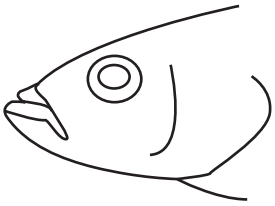
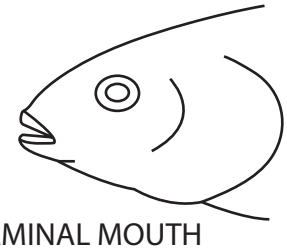
Examples: Body Part Shapes of Fish

Artwork by Nim Lee and Sarah Bruner

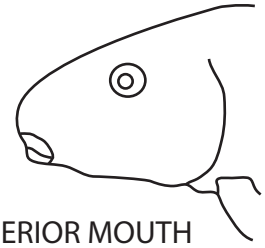
MOUTH SHAPES



SUPERIOR MOUTH
- Eats food above it
- May eat at the water's surface



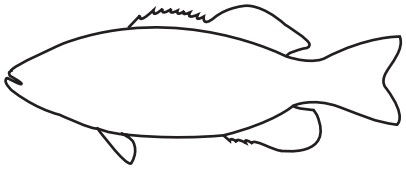
TERMINAL MOUTH
- Eats food in front of it



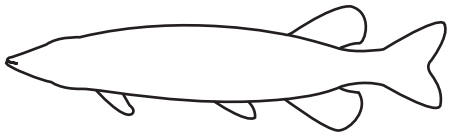
INFERIOR MOUTH
- Eats food below it
- May eat off of the bottom

BODY SHAPES

OVATE BODY
- Slow swimmer
- Difficult for predators to swallow

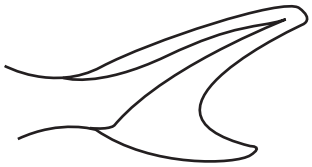


FUSIFORM BODY
- High speed swimmers

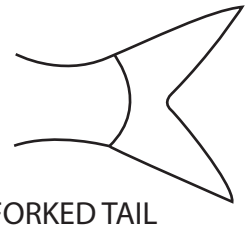


ELONGATE
- Hides in rocks and weeds

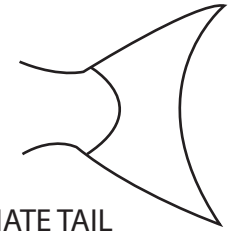
CAUDAL / TAIL FIN SHAPES



HETEROCERCAL TAIL
- Fast swimmer
- Constantly moving

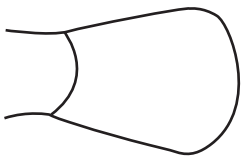


FORKED TAIL
- Fast swimmer

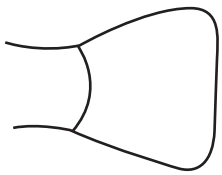


LUNATE TAIL
- Long distance swimmer

POINTED TAIL
- Slow swimmer
- Bottom wriggler



ROUNDED TAIL
- Good at turning
- Fast for short distances



TRUNCATE TAIL
- Good at turning
- Slower swimmer

Adaptations Extension

Lesson Objectives:

- Students will be able to name 3 structural adaptations in response to a changing habitat.

Standards:

- **4-LS1-1** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- **4-LS1-2** Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

Materials:

- Awesome Adaptations worksheet
- Completed Fish by Design worksheets
- Fish Example worksheet
- Paper/Pencil

Worksheets:

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Awesome Adaptations

Background:

Earth has changed! As a biologist, your assignment is to adapt the fish below to survive and thrive in its new habitat.

Assignment:

Pick one of the habitats below. To help your fish adapt to its new habitat, you must consider the following questions. **WHERE** will your fish live? **WHAT** will it eat? **HOW** it will defend itself? And **HOW** will your fish move around to hunt or hide? You must give your fish **at least three** new adaptations to survive in its new habitat.

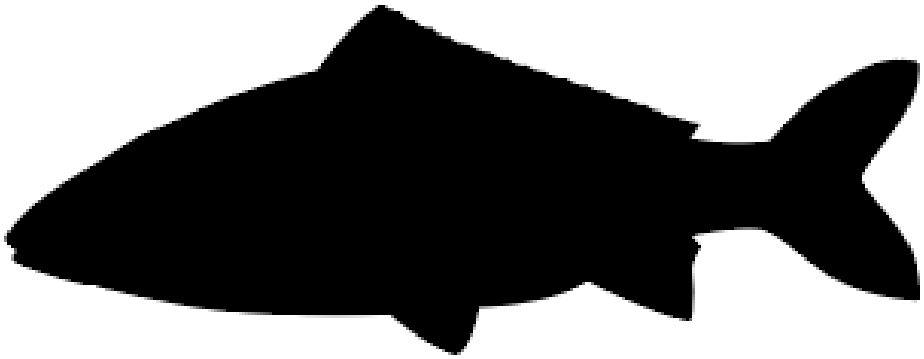
Habitats:

1. **Meltdown**

   Earth has just made it through a meltdown. This habitat has a warm, tropical climate. It has cloudy water filled with tree trunks and branches, many surface plants and much insect activity. The insects draw schools of small fish close to the surface to feed, exposing them to predators. Other local animals include catfish, and eels. Tropical birds have survived and feed on large, brightly colored fish that they catch near the surface.

2. **Ice Age**

   Earth has just made it through an ice age. This habitat has cold, clear water with rocky ocean floors. Few plants grow among the rocks where small fish and crabs can be found. Other local animals include sharks, squid, lobsters, and whales. Seals have survived as well and are fast predators, mainly hunting schooling silver fish in deep water.



Biologist Name:_____ Habitat Chosen:_____

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Adapt to Survive

Based on the habitat you chose; describe how your fish will adapt the following.

Body Shape:	Eyes (number, vision type, etc.):
Fins (number, shape, function, etc.): Dorsal: Ventral: Pectoral: Caudal/tail:	Predator/Prey Relationship: Predators: Prey:
Location (top, middle, bottom of water):	Defense Mechanisms:
Mouth (shape, teeth, etc.):	Color:

What does your fish look like with its new adaptations?

Create a detailed drawing of your fish in the box below.

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Useful Links

Marine Animal Facts
https://www.fisheries.noaa.gov/national/outreach-and-education/fun-facts-about-sea-life

Virtual Dives in marine sanctuaries
https://sanctuaries.noaa.gov/vr/

Natural Selection Interactive
Interactive game about how adaptations help animal survive through natural selection
https://www.nationalgeographic.org/interactive/defender-natural-selection/

California Fish Video
Video about different species of California fish, focusing on their mouths as an adaptation
https://ca.pbslearningmedia.org/resource/4e0588ee-4572-4761-9307-05374ef15492/4e0588ee-4572-4761-9307-05374ef15492/

Flying Fish
Wild Kratts video about flying fish
https://ca.pbslearningmedia.org/resource/e042374b-7a39-4343-841c-b9b247736e3d/koki-and-the-fish-wild-kratts/support-materials/

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