

Biology 1200 - Vancouver Aquarium Field Trip

Your name _____ **Date:** _____

To investigate form fits function of the Animalia we will explore: marine invertebrates, and vertebrates: - fish, amphibians, reptiles, birds and mammals.

Objectives: Discover a representative species from each group and describe its anatomy, and adaptative structures for functions such as locomotion, feeding, and habitat use.

If time, you can take in some shows (check the schedule when you arrive):

Sea otter feeding

Sharks

4D theature experience

In the marine and freshwater worlds, we have animals from most major phyla with diverse forms. You will find some representatives and collect data to describe them.

Data to collect at each exhibit, based on only your observations (adaptations are based largely on speculation) - don't look up facts online, rather use the resources in the aquarium (signs, staff, teacher):

Name of a representative organism.

Body description: length, shape, colour, skin texture & features, position of mouth, eyes, ears, fin shape, tail shape, etc.

Drawing, photograph, or a description of some peculiarity you learned about the animal

Habitat: open ocean, coastal, reef, ocean bottom, crevices, terrestrial forest, pond...

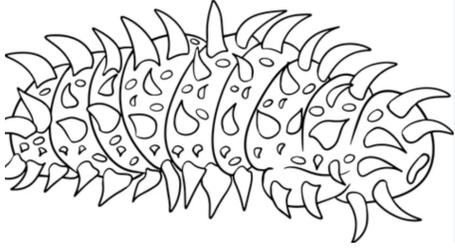
Form and function: How do the animals' adaptations, such as body parts, behaviours or camouflage help their functions of survival. Body parts adapted to the environment, predators and ability to find food include fins, mouthparts, tails, appendages, skin colour, eye location, mouth location, whiskers, body fat ...

Or peculiarity: The sea cucumber can essentially liquefy its body and pour itself into a small space. It does this when threatened by predators such as crabs, sea stars and some varieties of fish.

Example:

Sea cucumber (Phylum: Echinodermata)

Drawing:



Body description: Elongated cylindrical soft body, long sparse yellow spines on top, and shorter yellow spines underneath. Body red in colour and very flexible. About 25 cm long.

Habitat: Ocean floor close to rocks and kelp. Some anemones and corals are also in the vicinity

Adaptations: The spines may be to ward off predators, and the flexible body to escape between narrow openings.

To make such a large facility as the aquarium more manageable, I have sectioned questions for each exhibit on the following pages.

Exhibit: **Treasures of B.C.**

Group to investigate: **invertebrates**

Crabs, snails, anemones, jellies and sea stars are just a few examples of invertebrates.

Invertebrates are animals that do not have a spine or vertebral column. They do not have bony skeletons. Overall, they are incredibly diverse: approximately 97% of all animal species are invertebrates. For this reason, they are classified into more than 30 phyla - from sponges to arthropods.

Find a sea urchin & fill out the following:

Species name	
Body Description:	
Drawing, photo, or peculiarity of the animal	
Habitat:	
Adaptations fit functions:	

Name two other organisms in this exhibit that are most similar to the sea urchin?

What are two other organisms in this exhibit that are most dissimilar?

Exhibit: **Treasures of B.C.**

Group to investigate: **bony fish**

Salmon, flounder, and ling cod are a few examples of the more than 30,000 species of bony fish.

The skeletons of these animals (Class Osteichthyes) are composed of bone. All bony fish have gills, which are essential for breathing in most species. They also possess a swim bladder, which helps manage neutral balance so the fish neither sinks nor floats. The opercula protect the gills & direct flow of water.

Find a flounder and fill out the following:

Species name	
Body Description:	
Drawing, photo, or peculiarity of the animal	
Habitat:	
Adaptations to fit functions:	

Find a different kind of flattened fish. How is it different or like the flounder?

Exhibit: **The Tropics**

Group to investigate: **Cartilaginous fish**

Sharks, rays, skates and chimaera are cartilaginous fish.

The skeletons of these animals (Class Chondrichthyes) are composed of cartilage instead of bone. Their bodies are covered with dermal denticles, providing a smooth appearance. Depending on species, they will have 5-7 gills for breathing. Many must continuously swim to breathe.

Find a shark and fill in the following:

Species name	
Body Description:	
Drawing, photo, or peculiarity of the animal	
Habitat:	
Adaptations to fit function:	

Exhibit: **Frogs Forever?**

Group to investigate: **Amphibians**

Frogs, toads, salamanders and newts are all amphibians.

Amphibians are a class of exothermic (cold-blooded) vertebrates. They have smooth skin with no scales, and almost all live in moist environments and need to keep their skin damp.

Find a salamander and fill out the following:

Species name	
Body Description:	
Drawing, photo, or peculiarity of the animal	
Habitat:	
Adaptations to fit function:	

Why is the existence of frogs threatened?

Exhibit: **Amazon Gallery**

Group to investigate: **Reptiles**

Turtles, alligators and snakes are examples of reptiles.

Members of the class Reptilia are covered in either scales or hard scutes. They are exothermic and, thus, depend on their environment and own activity levels to regulate body temperature. This allows the animal to live off much less energy and food than a comparably sized endothermic animals.

Find the anaconda and fill in the following:

Species name	
Body Description:	
Drawing, photo, or peculiarity of the animal	
Habitat:	
Adaptations to fit function:	

Name two other reptiles in this exhibit:

Exhibits: **Canada's arctic & B.C. wild coast**

Group to investigate: **Mammals**

Otters, whales, seals and humans are examples of mammals.

Mammals have five defining characteristics.

They...

... are endothermic (warm-blooded) - their body temperature remains constant.

... have hair or fur.

... give live birth.

... breathe air through lungs.

... have mammary glands to nurse their young.

Find a sea lion or seal and fill in the following:

Species name	
Body Description:	
Drawing, photo, or peculiarity of the animal	
Habitat:	
Adaptations for functions:	

What is the difference between a seal and a sea lion?

Exhibit: **Amazon Gallery or outdoor exhibits**

Group to investigate: **Birds**

Penguins, seagulls and pelicans are examples of birds.

The class Aves can be distinguished by their beaks, feathers and wings. They are egg-laying, and most species form socially monogamous pairs. Flying birds have hollow bones while marine birds, like penguins, have dense bones to allow for submersion.

Find a penguin and fill in the following:

Species name & phylum:	
Body Description:	
Drawing, photo, or peculiarity of the animal	
Habitat:	
Adaptations to fit function:	

Are parrots endothermic or exothermic?

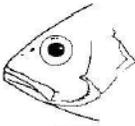
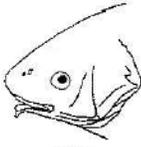
A table to help describe the body parts of fishes:

Fish Observations

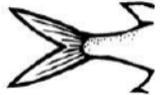
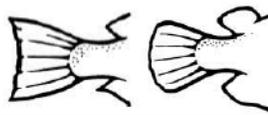
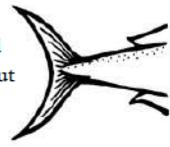
Body Shape

 <p>Fusiform This streamline shape reduces drag and requires a minimum amount of energy to swim.</p>	 <p>Depressed Being flattened from top to bottom makes it easier for fish to live on the bottom, where they can hide and feed.</p>
 <p>Laterally Compressed Flattened side to side allows for greater maneuverability with quick burst of speed and easy turns.</p>	 <p>Elongated A snake like body allows for easy movement through coral and rocky openings.</p>

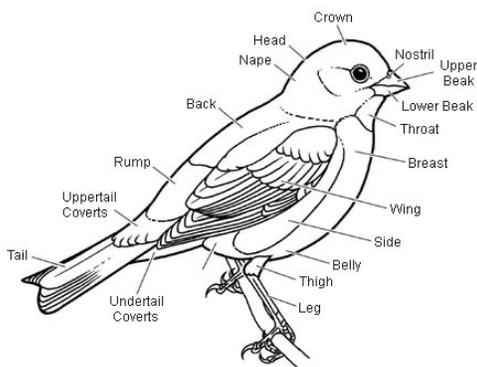
Mouth Position

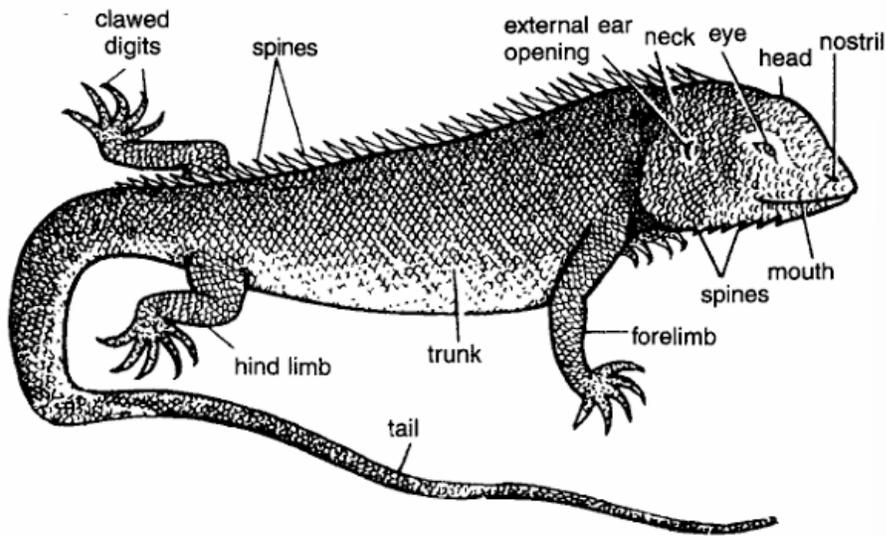
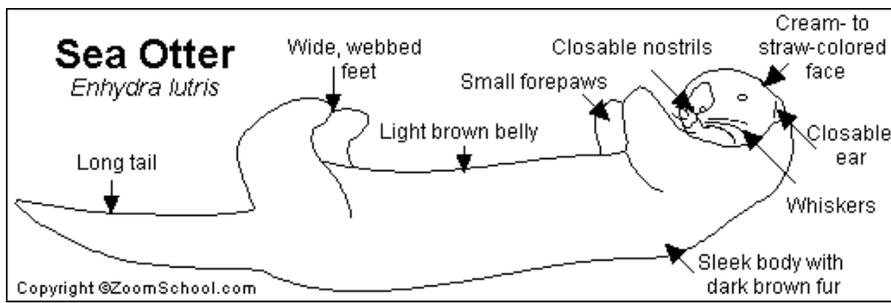
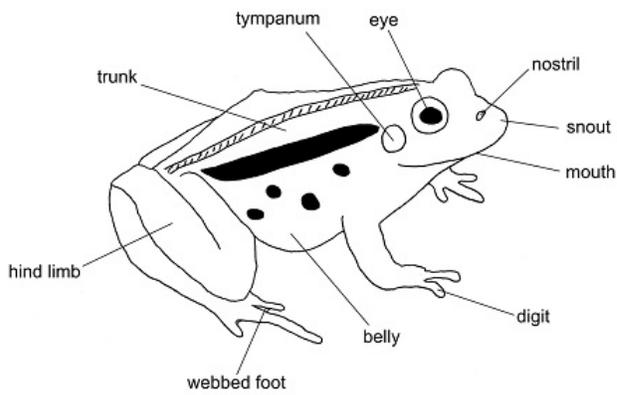
 <p>A terminal mouth is located at the end of the fishes head. Fast swimming predators have terminal mouths</p> <p style="font-size: small; text-align: center;">terminal</p>	 <p>An inferior mouth opens downward like most sharks. Some fish use inferior mouths to feed on bottom dwellers.</p> <p style="font-size: small; text-align: center;">inferior</p>	 <p>Mouth opens upward, fish with a superior mouth hide on the bottom and seize prey that swim above it.</p> <p style="font-size: small; text-align: center;">superior</p>
---	--	--

Caudal Fins

 <p>Many continuously swimming fish have forked caudal fins</p>	 <p>continuous caudal fins (dorsal, caudal, and anal fins attached) are able to swim in and around cracks and crevices.</p>
 <p>Fish with truncate or rounded caudal fins are usually strong, but slow, swimmers.</p>	 <p>lunate caudal fins tend to be the fastest fishes and maintain a rapid speed for long durations.</p>

Bird anatomical description terminology:





Visitor Map



vanaqua.org/visit/map/

LEGEND

- | | | | | | |
|--|---|--|----------------------------|--|--------------------------|
| | BILL REID PLAZA | | EXPLORATION GALLERY | | Guest Services |
| | TECK CONNECTIONS & ENGAGEMENT GALLERIES | | BARKER INTERACTIVE WET LAB | | Elevator |
| | PACIFIC CANADA | | 4-D THEATRE | | Stairs |
| | FROGS FOREVER? | | IMMOTION VR | | Gift Shop |
| | TREASURES OF THE B.C. COAST | | CLOWNFISH COVE | | Food & Beverage |
| | STELLER'S BAY | | THE TROPICS | | Water Station |
| | CANADA'S ARCTIC | | GRAHAM AMAZON | | Washroom |
| | B.C. WILD COAST | | DRAGONS | | Accessible Washroom |
| | SEAL COVE & PLAZA | | AMAZING AXOLOTLS! | | Genderless Washroom |
| | SEA OTTERS | | | | Nursing/Quiet Room |
| | | | | | Stroller & Wagon Parking |
| | | | | | Lockers |
| | | | | | Accessible Viewing |

Share what you loved about your visit:

@vanaqua #vanaqua