



Animal Biodiversity

Teacher Resources - High School (Cycle 1)

Biology

Redpath Museum

Ecology

▶ What defines a habitat?

▶ 1. Geographic Location

- ▶ The location of a habitat is determined by its latitude and its longitude. The habitats of most animals are large and may cover a large range of coordinates.

▶ 2. Climate

- ▶ Temperature, humidity, atmospheric pressure, wind and precipitation are the variables that define climate. All of these characteristics are variable with, and will be influenced by the geographic location of the habitat. For example, climates close to the poles will tend to have lower temperatures than habitats near the equator.

▶ 3. Flora

- ▶ The flora is defined by the community of plant that exist in the habitat. The variety of species in the flora is greatly influenced by the habitat's climate, elevation and soil.

▶ 4. Fauna

- ▶ The fauna consists of the community of animals living in the habitat. It is influenced by the area's climate and elevation. The habitat's flora will also influence the fauna by providing food and shelter for animals.

▶ 5. Human Presence

- ▶ The presence of humans may affect the habitat, either by providing alternative sources of food such as waste or livestock, or by leading to competition for food by domesticated animals.

Ecology

- ▶ Describe habitats of certain species
 - ▶ Coyote
 - ▶ The coyote is found in North America, from the mountains of Alaska all the way south to Guatemala in Central America. It inhabits short grass areas of grasslands and deserts where small to medium sized rodents thrive. The climates of these habitats are similar as they both receive little precipitation and have a highly variable temperature. It is also frequently observed in rural and suburban areas due to its omnivore diet that has it feeding on garbage and livestock.



Coyote Habitat²⁹



Coyote in the Redpath Museum

Ecology

- ▶ Describe habitats of certain species
 - ▶ Common Snapping Turtle
 - ▶ In North America, the common snapping turtle's habitat is situated east of the Rockies from southern Canada to Florida, with an exception to the West of the southern US. Shallow ponds or streams are preferred habitats, but the turtle will also extend its range to estuaries, which have brackish water. Their habitat is also very diverse in other animal forms; invertebrates, fish, frogs, other reptiles, birds and mammals. The flora is also diverse and dense, as the turtle requires it for hiding and feeding.



Common Snapping Turtle Habitat³⁰



Common Snapping Turtle in the Redpath Museum

Ecology

- ▶ Describe habitats of certain species
 - ▶ Atlantic Puffin
 - ▶ The habitat of the Atlantic puffin is particular because it extends over both land and water. It extends from the coast of Eastern North America the coast of Western Europe, up to the coastal margins of the Arctic. Their range includes all land and water within this area. The climate in which the puffin thrives is then relatively constant, as the proximity of water bodies tempers the precipitation (always high) and temperature variation. The fauna and flora in the puffin's habitat is however highly variable, as it extends over land and sea.



Atlantic Puffin Habitat³¹



Atlantic Puffin in the Redpath Museum

Adaptation

- ▶ Physical adaptations increasing chances of survival
 - ▶ 1. Camouflage
 - ▶ Animals hide in their environment by physically looking like it
 - ▶ Helps to prevent predation, thus increasing survival
 - ▶ a. The Gray tree frog hides on tree barks
 - ▶ b. The arctic fox hides in the snow in winter
 - ▶ c. The American bittern hides in marsh vegetation
 - ▶ d. The great horned owl resembles tree bark



a. Gray Tree Frog³²



b. Arctic Fox³³



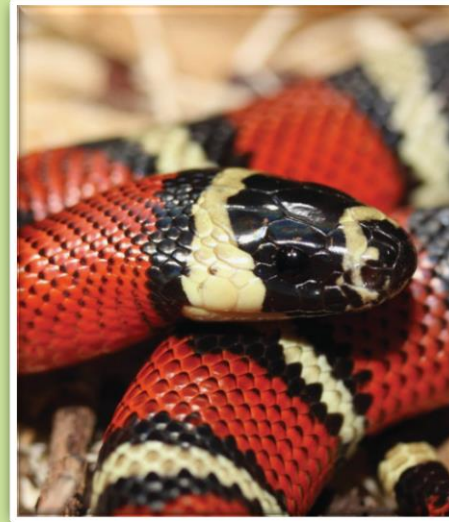
c. American Bittern³⁴



d. Great Horned Owl³⁵

Adaptation

- ▶ Physical adaptations increasing chances of survival
 - ▶ 2. Mimicry
 - ▶ Animals resemble other harmful organisms
 - ▶ Predators confound the mimic species for a harmful one, and don't feed on them
 - ▶ a. Batesian Mimicry
 - ▶ A harmless organism resembles a harmful one
 - ▶ Milk Snake (harmless) and Coral snake (deadly)
 - ▶ b. Müllerian Mimicry
 - ▶ Both organisms are harmful and look alike
 - ▶ Monarch and viceroy butterflies



Milk Snake³⁶



Coral Snake³⁷



Monarch Butterfly³⁸



Viceroy Butterfly³⁹

Adaptation

- ▶ Behavioural adaptations increasing chances of survival
 - ▶ 1. Safety in numbers
 - ▶ By grouping with conspecifics, an individual is less likely to be the victim of predation than if it were by itself.
 - ▶ Muskox
 - ▶ Form a circle around the young to protect them from all angles
 - ▶ Sardines
 - ▶ Group to increase chances of survival against attacks from fishes or birds



Muskox Group⁴⁰



Sardine School⁴¹

Adaptation

- ▶ Behavioural adaptations increasing chances of survival
 - ▶ 2. Faking
 - ▶ Certain species fake death or injuries to prevent predation on themselves or their offspring.
 - ▶ Hognoses
 - ▶ Hognoses snakes will “play dead” by rolling over to deter predators from eating them. They also emit a foul musky odor, let their tongues hang out of their mouths and also produce small blood droplets to complete the act.
 - ▶ Killdeer
 - ▶ This bird fakes a wing injury while leaving its nest to attract predators away from its eggs, thereby increasing their chances of survival.



Eastern Hognose Snake “playing dead”⁴²



Killdeer faking injury⁴³