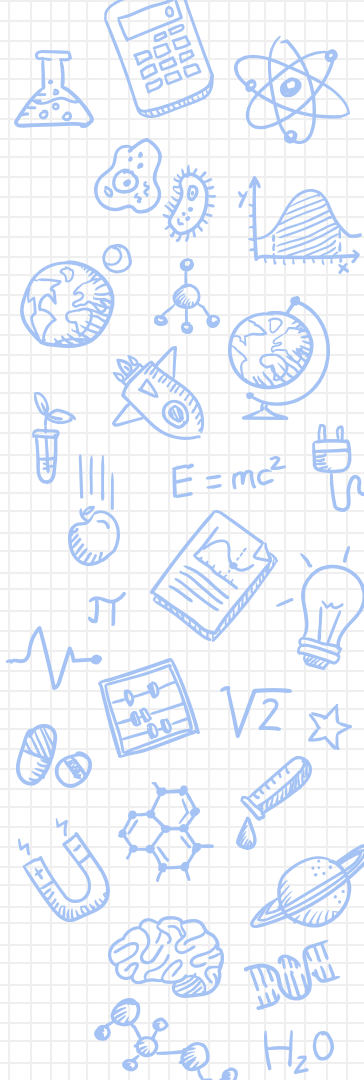
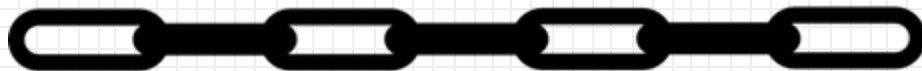




Solve It – Riddle Review

As we get ready to begin today's lesson, let's try these riddles!

1. What consumes but does not have a mouth, grows but will not stop and dies to live again?
2. What is the only chain we eat?





Vocabulary

Adaptations:

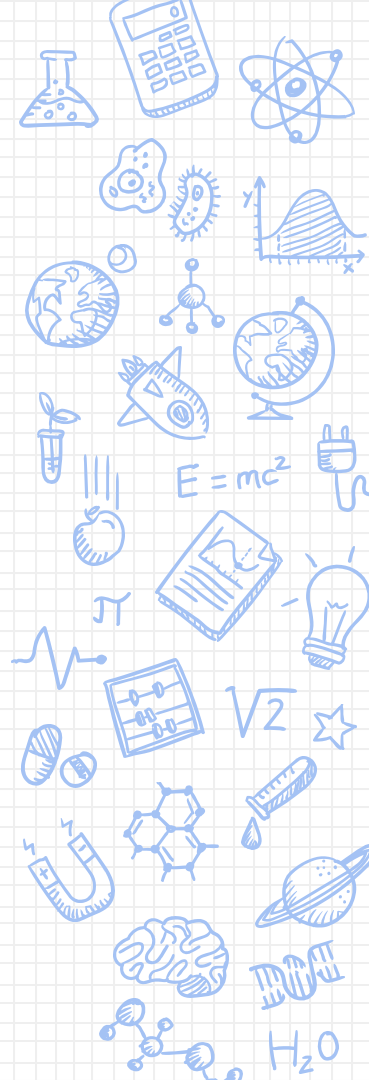
An evolved trait that helps organisms survive in the environment.

Biodiversity:

The variety of life in the world or a particular ecosystem.

Resilience:

The ability of an ecosystem to respond to a disturbance by resisting damage and recovering.





Matching: Adaptations!



Shivering to
generate heat



Coloring changing
to help blend in



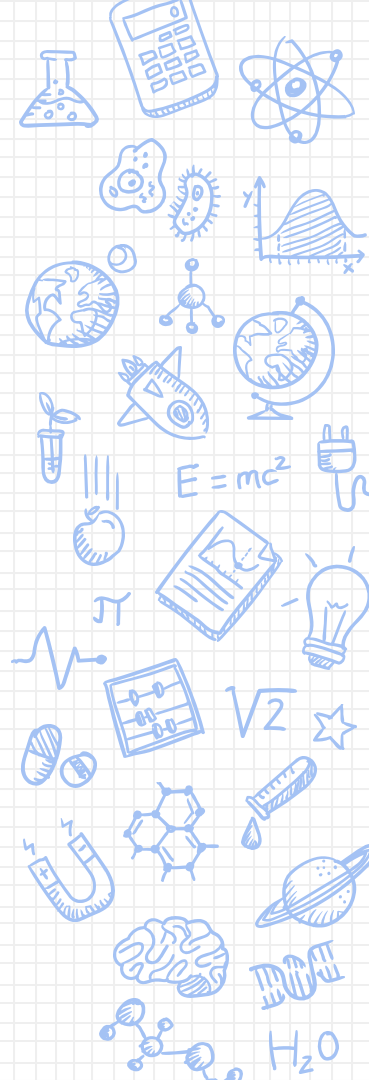
A bear hibernating

Which
description
matches the
kind of
adaptation?

Physiological

Behavioral

Structural



→ We will look at three (3) coastal ecosystems

- *How are these coastal ecosystems connected?*

Wetlands

A photograph of a wetland landscape. The foreground and middle ground are filled with lush green marsh grasses growing in shallow, muddy water. The water is calm, reflecting the sky. In the background, a line of trees and a distant shoreline are visible under a clear blue sky.

Coral Reefs

Mangroves

A photograph of a mangrove forest. The image shows numerous trees with dark, gnarled trunks and dense green foliage. The trees are situated in a body of water, and their roots are visible, extending into the water. The water is calm, reflecting the surrounding greenery and the dark trunks of the trees. The overall scene is a lush, natural environment.



Wetlands



- **Wetland:** a flooded ecosystem where water saturates the soil for varying amounts of time of time
- They are transitional zones between water and land that protect the land from storms and protect the water from toxins.
- *What kind of species and their adaptations might we find in a wetland?*

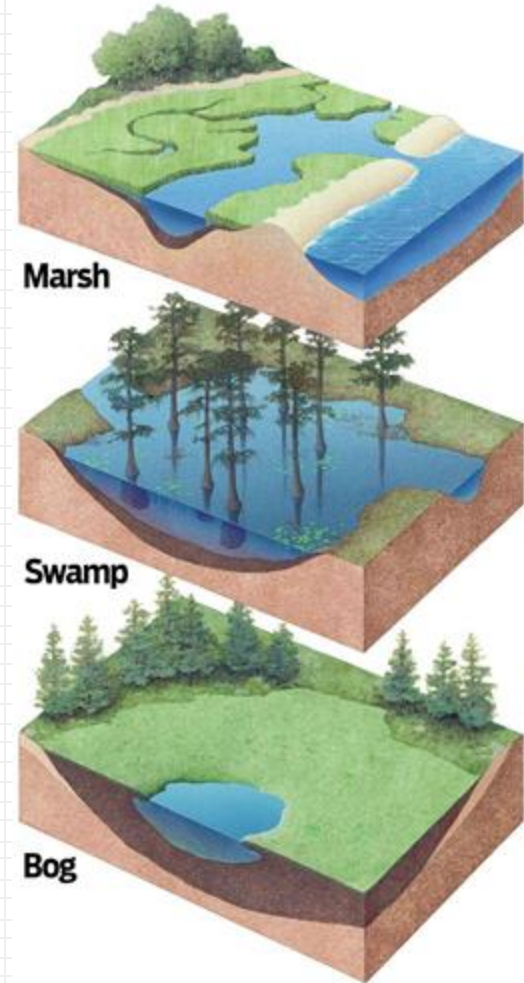




Characteristics of Wetlands



Different
types of
wetlands



Biodiversity of species in a wetland!



Wetland Species



Year-round Residents

Use the area for fishing and nesting year-round



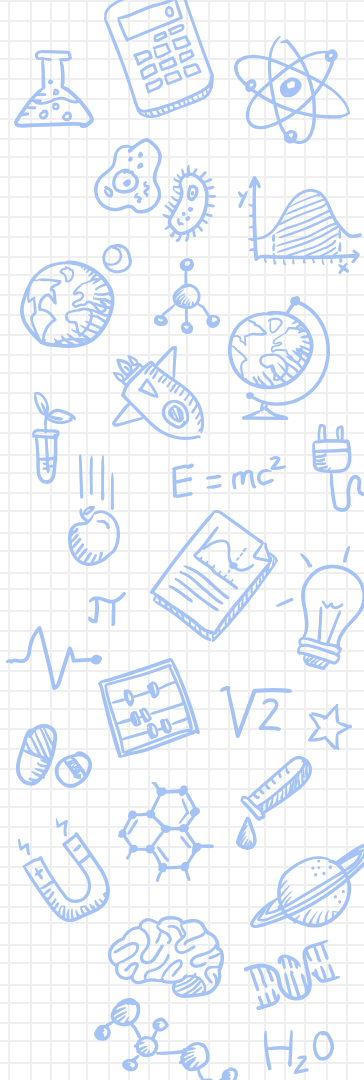
Migratory Species

Depend on the wetlands for a place to stay



Nursery Grounds

Many species rely on the ecosystem for juveniles to hide, to forage, and for shelter



Wetland Adaptations

Flora Adaptations

- Longer than usual stems with special air pockets to deliver more oxygen to the roots
- Root systems of these aquatic plants have special adaptations that allow them to gain the oxygen necessary and still live in **hydraulic** conditions.





Wetland Adaptations

Fauna Adaptations

- Wetlands have changing tidal levels and water temps.
- Stagnant water has less dissolved oxygen
 - Fish & crustaceans have special gills and skin allowing them to extract the O_2 .
- They also have more hemoglobin which carries the O_2 in their blood.

Hemoglobin is a type of protein that carries oxygen in our red blood cells throughout our body!



Special gills

Breathable skin!



Coral Reefs

🐠 **Coral Reef:** large underwater structures made of an exoskeleton called calcium carbonate (CaCO_3).

🐠 Coral reefs are made of individual corals called **polyps** which is an invertebrate.

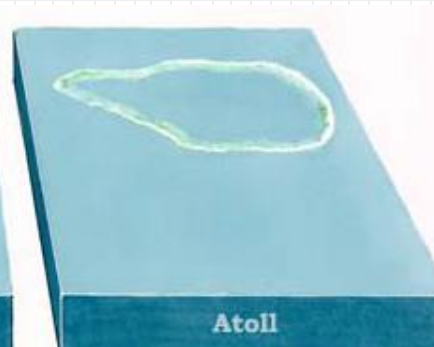
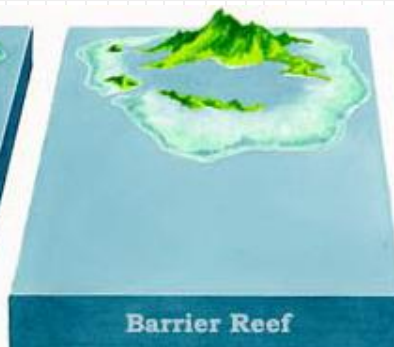
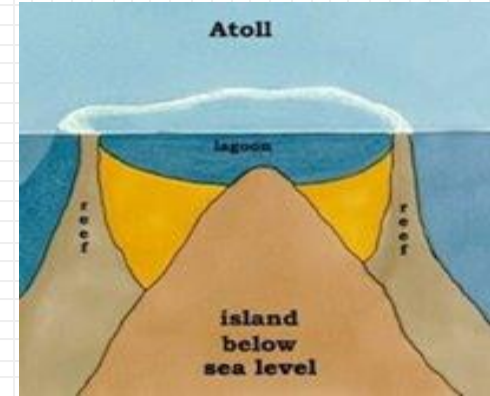
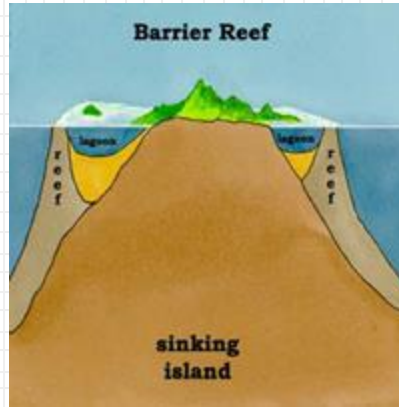
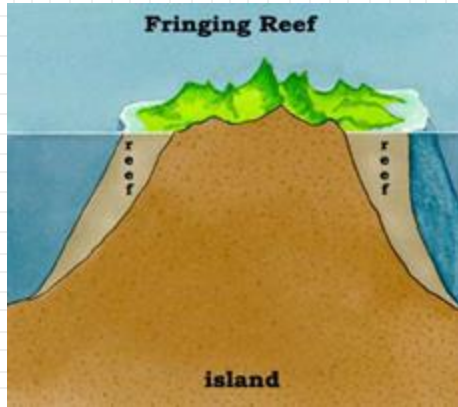


How do polyps adapt to the reefs?





Formation Types of Coral Reefs



What are the differences between these three types of coral reefs?



Coral Reef Species



Year-round Residents

Sessile species.



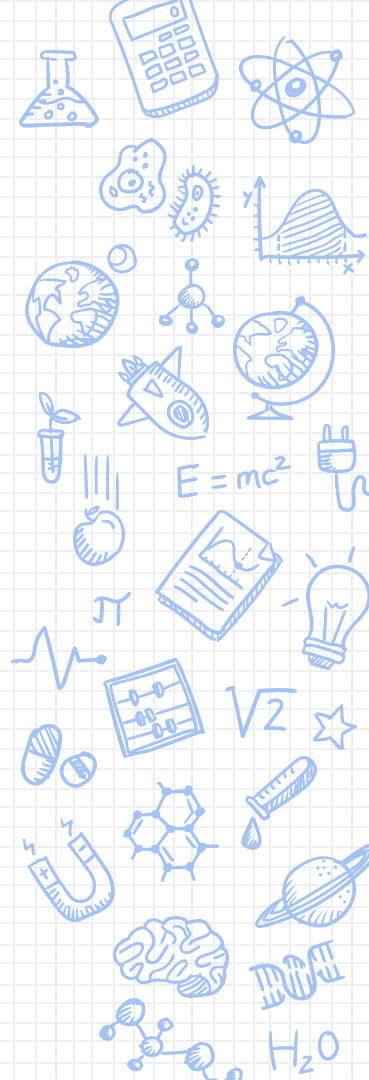
Visitor Species

Some species visit for a cleaning, to forage, or for shelter



Nursery Grounds

Reef fish rely on coral reefs to provide a safe space for their juveniles





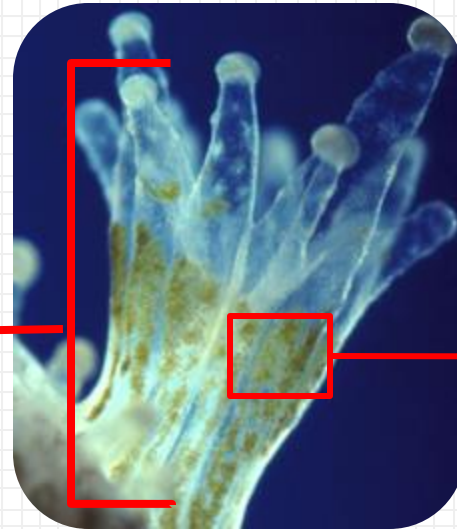
Coral Reef Adaptations

Flora Adaptations

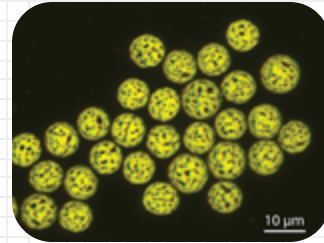
- Zooxanthellae provide corals with up to 60% of their nutrition from photosynthesis
- The corals provide protection, CO₂, and other nutrients

What kind of symbiotic relationship is this?

Coral polyp



Zooxanthellae



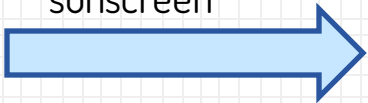


Coral Reef Adaptations

Fauna Adaptations

- Reef fish have evolved to have flatter bodies which allow them to maneuver in the crevices
- Reef fish vibrant colors camouflage them from predators

Fluorescent
pigment acting as a
sunscreen



What other adaptations
might we see for protection?

Butterfly fish have a false eye on their dorsal fin to confuse predators to think it's their head





Mangroves

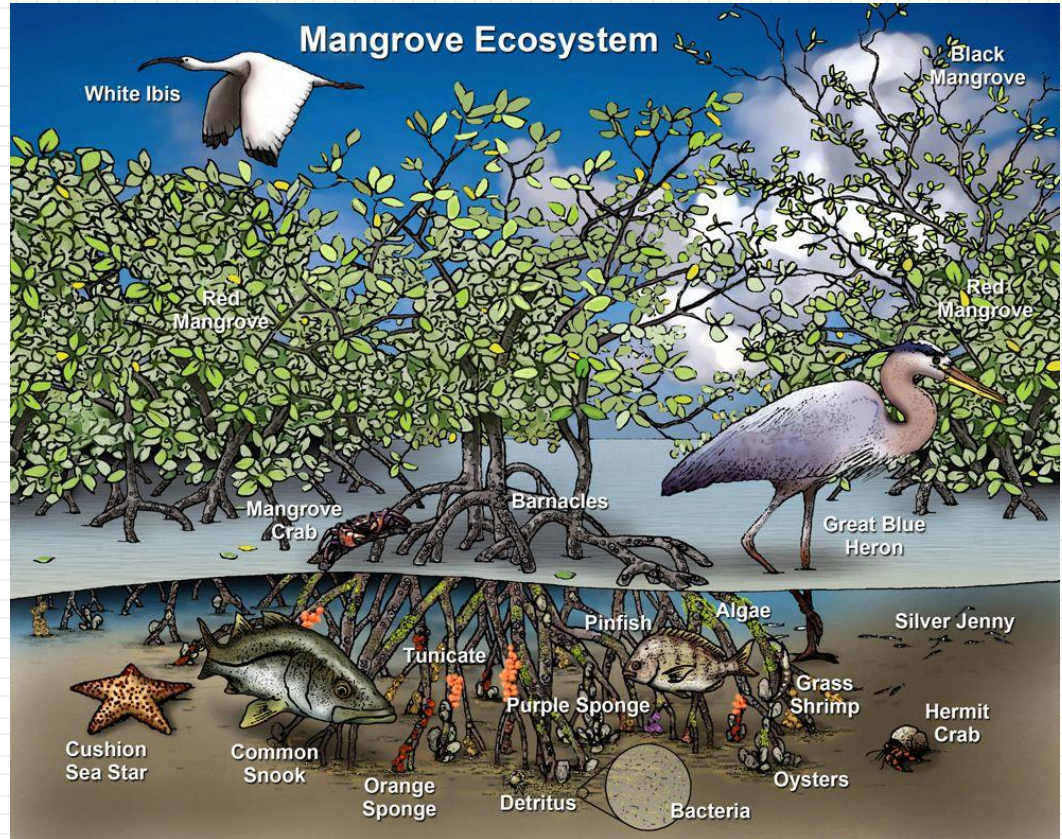
- **Mangroves:** the species of a tree that makes up a Mangrove Forest. They are trees or shrubs that grow in coastal swamps
- Bi-daily following with high tide, intense sun exposure, and roots overwhelmed with salt
- There are about 80 different species of mangrove trees





Characteristics of Mangroves

What kind of characteristics do we see?





Mangrove Adaptations

Snorkel Roots

- Peg like roots extending to be above the waterline
- Also called pneumatophores
- Allow the mangrove to breath
- Seen mainly with the White Mangrove (*Laguncularia racemose*)





Mangrove Adaptations

Buttressing Trunks

- Large wide trunks extending out on all sides
- Provide stability in shallowly rooted trees and provides defense against storms
- Also serves as a long-distance conduit for nutrients and water
- Seen in taller mangroves (not shrubs)





Mangrove Adaptations

Prop Roots

- Grow from the branches of the tree down to the water and sand/mud
- Provide support to the higher center of gravity needed during the strong storms
- Seen typically with the Red Mangrove which is found in Florida
- They also absorb nutrients and water



Matching: Coastal Habitat Adaptations!



Prop roots help during intense weather for mangroves



Fish hiding in a reef to protect itself from predators



Fish being able to carry more hemoglobin for oxygen

Which description matches the kind of adaptation?

Physiological
Behavioral
Structural



Summary of Lesson 2

- We looked at three distinct **coastal habitats**
 - ◆ **Wetlands**
 - ◆ **Coral Reefs**
 - ◆ **Mangroves**
- Each habitat hosts a variety of species - **biodiversity**
- In order for organisms to thrive in these habitats they have unique **adaptations**
 - ◆ **Wetlands:** Able to survive in salt water at various times with little oxygen present
 - ◆ **Coral Reefs:** Protection from predators!
 - ◆ **Mangroves:** Strong, salt tolerant roots for structure and support

