

Welcome Back!





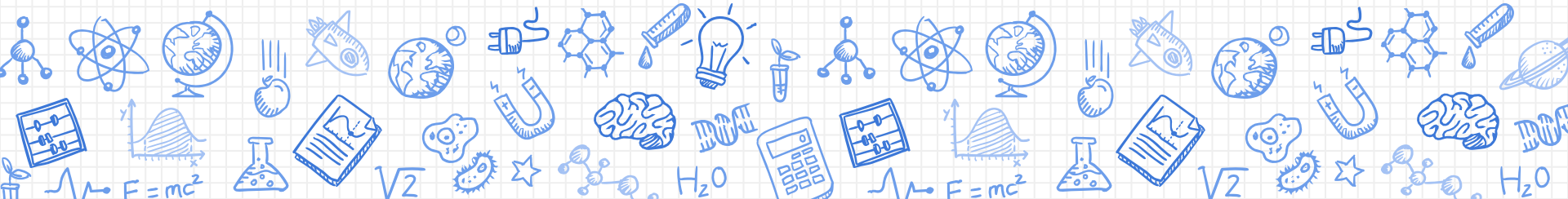
Solve the Riddle: Coastal Habitats

1. My plants are adapted to waterlogged soil since I am very wet at times. You may find cattails, dragonflies and maybe even an alligator. What am I?
2. I am often called the rainforest of the ocean. I offer plenty of species a variety of services. What am I?
3. I live on the edge of coastlines. I have complex root systems that transport water, nutrients and oxygen. They also provide structure and support. What am I?





What impacts do we think we may see in Wetlands, Coral Reefs, and Mangroves as the Climate Changes?

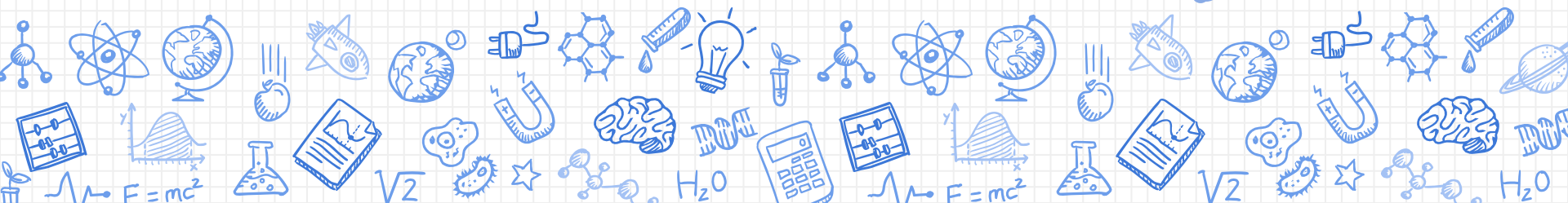




Let's make a list of threats to our coastal habitats!

What happens if we lose the habitat?

Who is most impacted by coastal habitat threats?





X Purify water

X Purify water

X Protect coastlines from damaging storms

X Provide a habitat for different species





Wetland Threat Impacts: Sea Level Rise

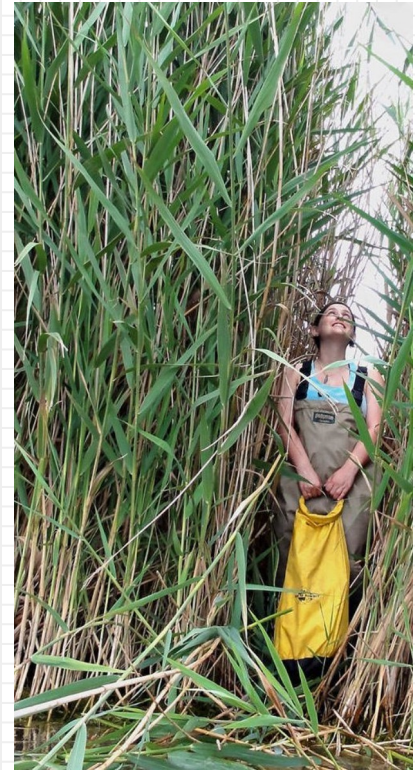
- ✗ On average, the sea is rising globally at $\frac{1}{8}$ of an inch annually
- ✗ Rapid increase of sea level, wetlands are unable to adapt and survive
- ✗ Existing wetlands may be unable to migrate inland because of development





Wetland Threat Impacts: Decrease in Biodiversity

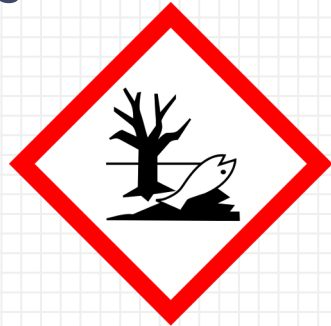
- ✗ Native flora and fauna species may be unable to adapt to rapid changes
- ✗ Populations decline and allow invasive species to take advantage
- ✗ As biodiversity decreases, so does the ability withstand climate stressors like storms, pollution & sea level rise





Wetland Threat Impacts: Superfund Sites

- ✗ Areas polluted with hazardous materials that require long-term solutions
- ✗ Many in the US are related to heavy metal toxicity and resulted in high concentrations in wetlands





Coral Reef Environmental Importance

- ✗ Protect coastlines by absorbing storm energy
- ✗ Most biologically diverse and complex structure in the marine environment!





Coral Reef Threats: Sea Level Rise

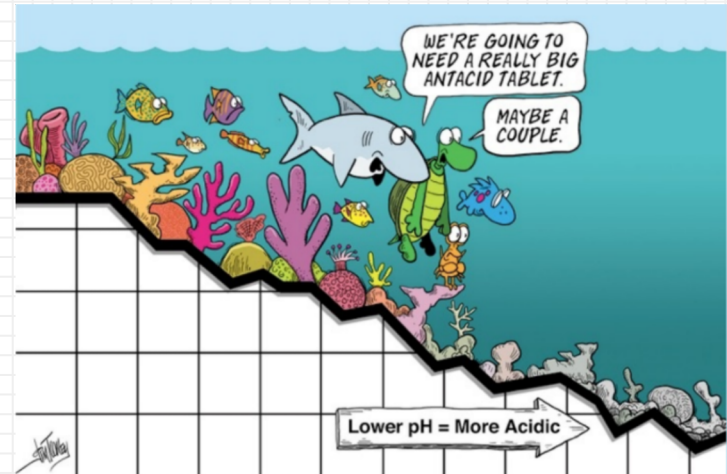
- ✗ As the global surface temperature rises, glaciers are melting
- ✗ Around $\frac{1}{3}$ of the world population lives along the coast
- ✗ Cities like New York, Miami, Bangkok, and Shanghai are at risk
- ✗ Small island nations like the Maldives, Grand Bahamas, Solomon Islands, and Micronesia are also at risk





Coral Reef Threats: Ocean Acidification

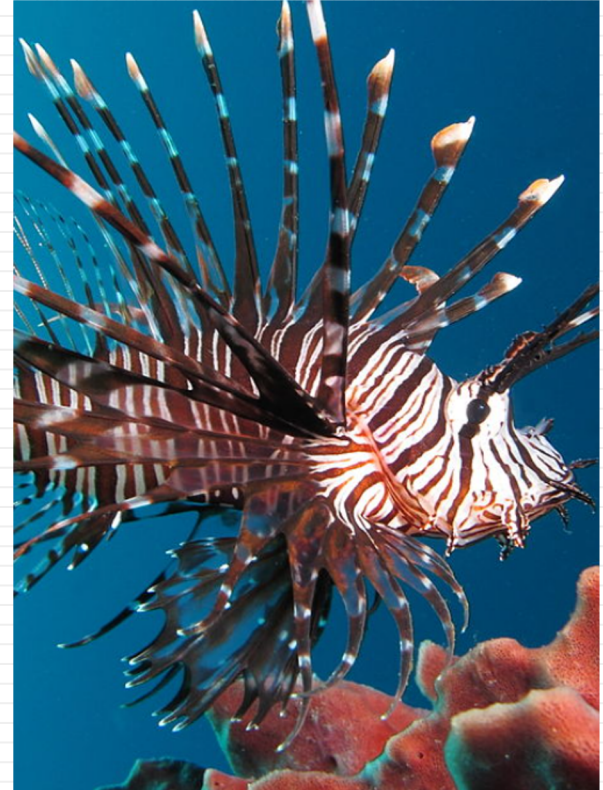
- ✗ As carbon dioxide is released into the atmosphere, the ocean absorbs some of it
- ✗ The more carbon dioxide it absorbs, the pH of the ocean changes
- ✗ Remember how we talked about how the changes of water quality, temperature, or pH can affect corals?
- ✗ This is what happens!





Coral Reef Threats: Invasive Species

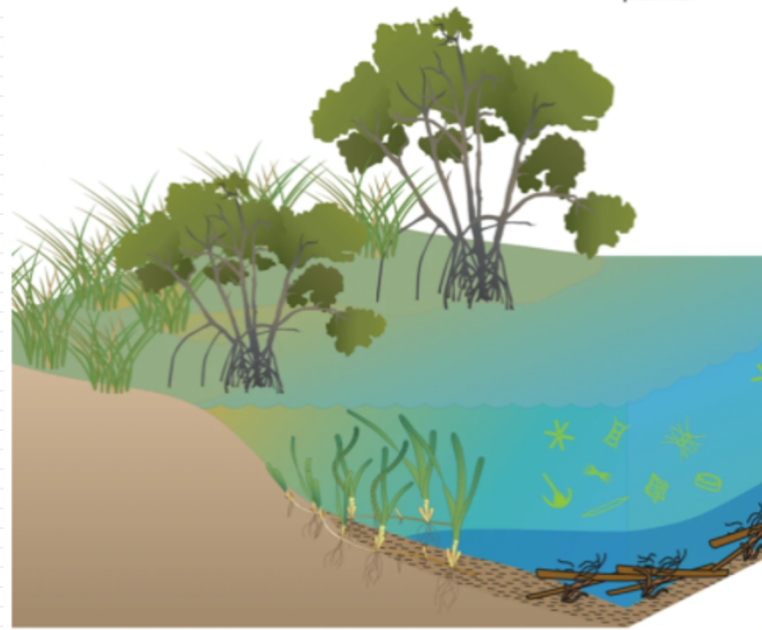
- X What is an **invasive species**?
 - X A species that causes harm in an ecosystem where it is not native
- X Most invasive species are opportunistic
- X **Lionfish** are an example of an invasive species
 - X Introduced into the Caribbean and coastline of Florida
 - X They eat **herbivorous** fish that eat algae
 - This means algae can run rampant
 - X Native fish can not compete meaning there is less biodiversity





Mangroves Environmental Importance

- Coastal protection from erosion, storms and waves
- Vital role in food cycles
- Roots capture and hold on to carbon





Mangrove Threats: Sea Level Rise

- Just like coral reefs and wetlands, sea level rise will impact mangroves
- These habitats will be covered with saltwater more often
- This can disrupt their ability to adapt
- May see higher tides that can erode the soil mangroves anchor themselves into





Mangrove Threats: Decrease in Biodiversity

- Removing mangroves for development has decreased the biodiversity
- When mangroves disappear, the nursery ground disappears for juvenile fish
- Rise in wave action that many of the species are not adapted to





Let's break up the words Marine and Debris to help us figure out what it means!



Activity: Debris Items

How long do you think it takes for these items to break down?



Plastic Container



Glass Bottles



Plastic Bags



Cigarette Butts



Balloon



Aluminum Can

Which item do you think is the most common piece of marine debris?



Summary of Lesson 4

→ Threats to Wetlands

- ◆ Sea level rise
- ◆ Decrease in biodiversity
- ◆ Superfund Sites

→ Threats to Coral Reefs

- ◆ Sea level rise
- ◆ Decrease in biodiversity
- ◆ Invasive species

→ Threats to Mangroves

- ◆ Sea level rise
- ◆ Deforestation, development

→ Threat to all three:

- ◆ MARINE DEBRIS

→ Next week we are going to talk more about marine debris and ways we can help!

