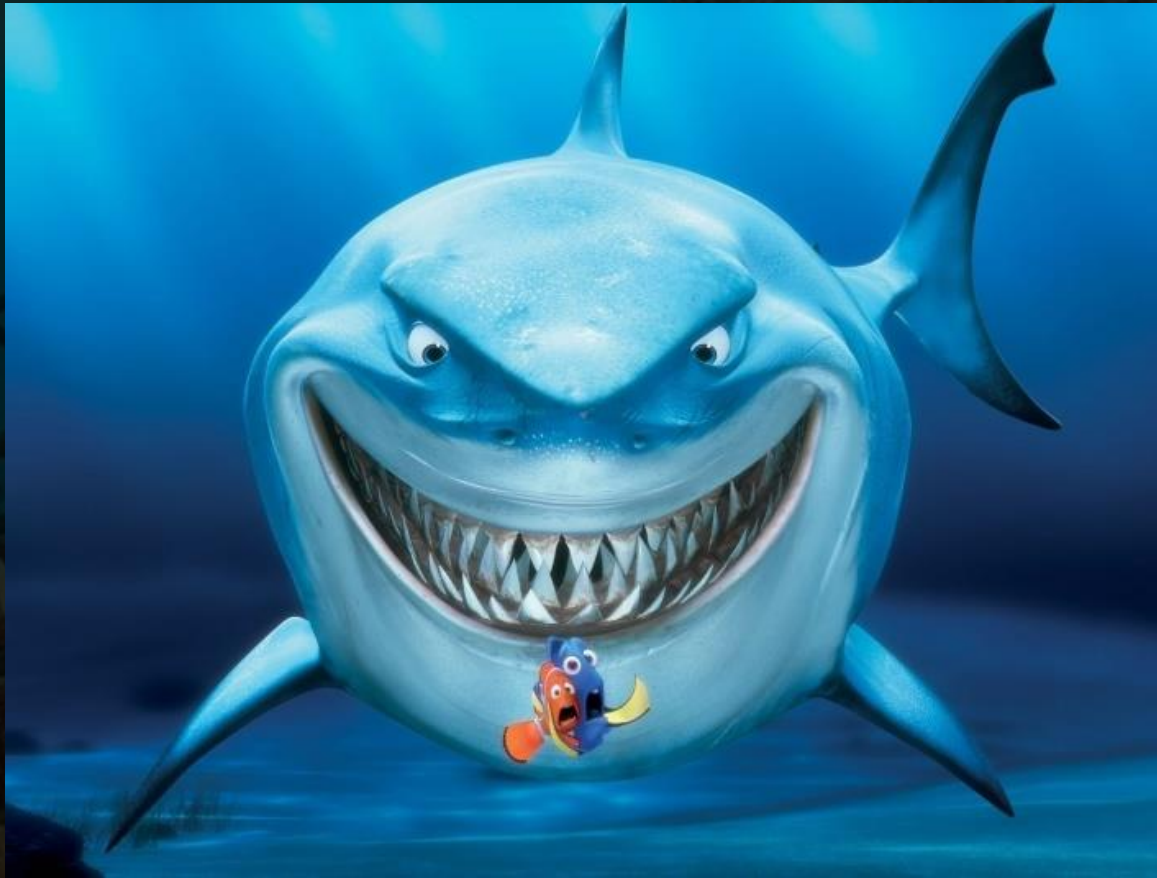


# Aquatic Ecosystems



# Think About It (not on notes)

A background image showing a sea turtle swimming in clear blue water above a vibrant coral reef. The turtle is positioned in the upper right, and the reef is visible at the bottom. The text is overlaid on a dark semi-transparent background.

We call our planet “Earth,” yet nearly three-fourths of Earth’s surface is covered with water.

Despite the vital roles aquatic ecosystems play in the biosphere, many of these ecosystems are only partly understood.

# Daily Objectives



- Describe the factors that affect aquatic ecosystems.
- Describe and compare the distinct ocean zones that make up marine ecosystems.

# Aquatic Ecosystems

The background of the slide is a vibrant underwater scene. At the top, a sea turtle with a patterned shell and flippers is swimming towards the right. Below it, a large school of black and white striped fish is visible. The bottom of the image shows a colorful coral reef with various types of coral in shades of orange, red, and green.

The limiting factors in water biomes are:

- Amount of salt (salinity)
- Amount of dissolved oxygen
- Sunlight

# 2 Types of Water Biomes

A large sea turtle is swimming in the upper half of the image. Below it, a vibrant coral reef is visible with several colorful fish, including two prominent striped fish. The background is a clear blue ocean.

- Freshwater
  - Rivers and Streams
  - Lakes and Ponds
- Saltwater
  - Ocean
  - Estuaries
  - Seashores (tidal areas)


# Freshwater Biomes



Freshwater contains little or no salt, so it has a LOW salinity.

Flowing freshwater = rivers and streams

Still Freshwater = lakes and ponds



# Flowing Freshwater

- Streams

- The faster a stream flows the greater the amount of dissolved oxygen in it.

Faster water flows = ↑ oxygen

# Flowing Freshwater

- Streams
  - The fish that live in streams are adapted to fast moving water





# Flowing Freshwater

- Rivers

- Water moves slower in a river and debris settles on the bottom.
- Because of this, rivers tend to have more nutrients and less dissolved oxygen.

↑ nutrients and ↓ oxygen

# Flowing Freshwater

- Rivers



# Freshwater



- Ponds
  - Small, shallow bodies of water
  - Sunlight penetrates all the way to the bottom
  - Most are completely filled with plant material
  - Very high amount of nutrients

# Freshwater

- Ponds



# Freshwater

The background of the slide features a large sea turtle swimming in clear blue water above a vibrant coral reef. The turtle is positioned in the upper right quadrant, moving towards the left. The coral reef below is diverse, with various colors including yellow, orange, red, and green. The overall scene is bright and clear, suggesting a healthy marine environment.

- Lakes

- Larger and deeper than ponds
- Plant growth is limited to the shoreline
- Sunlight does NOT penetrate to the bottom= no plants after a certain depth!

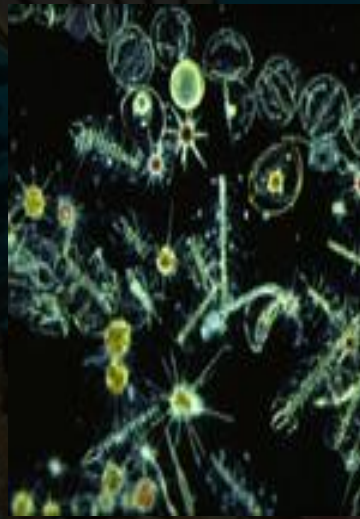
# Freshwater

- Lakes



# Plankton

Plankton are microscopic algae, plants, and other organisms that float on the surface of water biomes.



They need sunlight to survive.

# Plankton

Phytoplankton are important producers in water biomes.



They are the first step in many aquatic food chains



# Wetlands



A wetland is an ecosystem in which water either...  
...covers the soil or is present at or near the surface of  
the soil for at least part of the year.



# Wetland Types

**Types of freshwater wetlands include: bogs, marshes and swamps.**



# Bogs

Bogs: These are wetlands that are dominated by mosses, usually in depressions where water collects.

This water is often very acidic.



# Marshes



Marshes are shallow wetlands along rivers.

Marshes often contain...  
.....cattails, rushes, and  
other tall grasses.



# Swamps

Swamps look like **flooded forests**.

Water moves slowly through a swamp.

The presence of trees and shrubs distinguishes a swamp from a marsh.



# Saltwater Biomes



- About 95% of the water on Earth has a high concentration of salt. (High salinity)

# Saltwater Biomes



- Estuaries (Wetlands)
  - Area where a river meets an ocean
  - Mix of salt and freshwater
  - Located near coastlines, border land
  - Extremely fertile
  - Nutrient levels are higher than both salt and freshwater



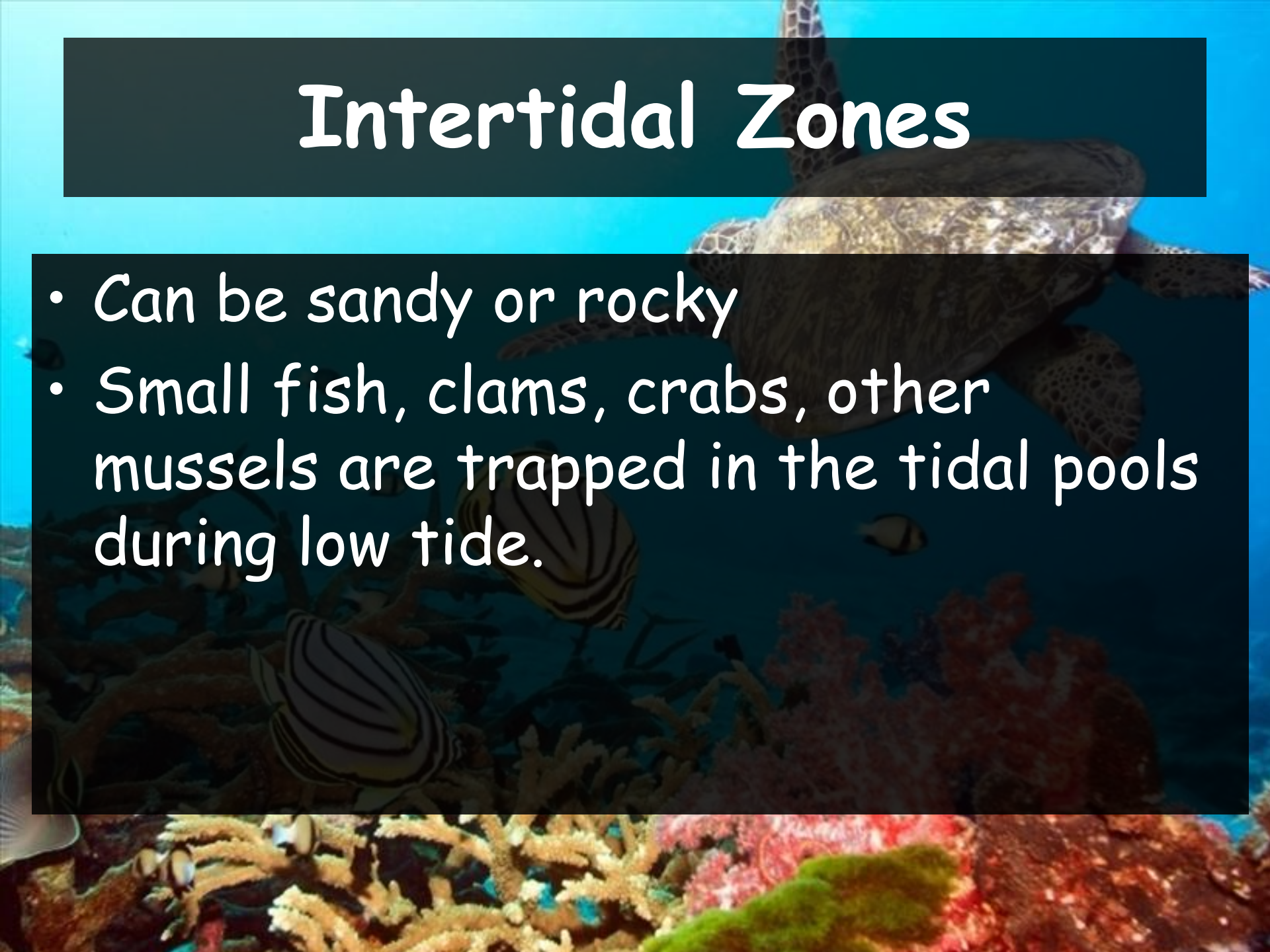
# Saltwater Biomes



- Seashores
  - Tides have a huge influence on life here
  - Intertidal Zone - Portion of the shoreline that is covered with water at high tide and exposed to the air at low tide.

# Intertidal Zones

A large sea turtle is swimming in the upper right portion of the frame. The background is a deep blue ocean with some faint, darker shapes that could be other marine life or coral.

- Can be sandy or rocky
  - Small fish, clams, crabs, other mussels are trapped in the tidal pools during low tide.
- 
- The lower portion of the image shows a vibrant coral reef. There are various types of coral in shades of orange, yellow, and red. Several small fish, including some with black and white stripes, are swimming around the coral.

# Intertidal Zones



# Saltwater Biomes

The background of the slide is a vibrant underwater scene. At the top, a large sea turtle with a patterned shell is swimming towards the right. Below it, a diverse coral reef is visible, featuring various types of coral in shades of orange, yellow, and red. Several striped fish are swimming in the water, and the overall lighting is bright and clear, suggesting a healthy marine environment.

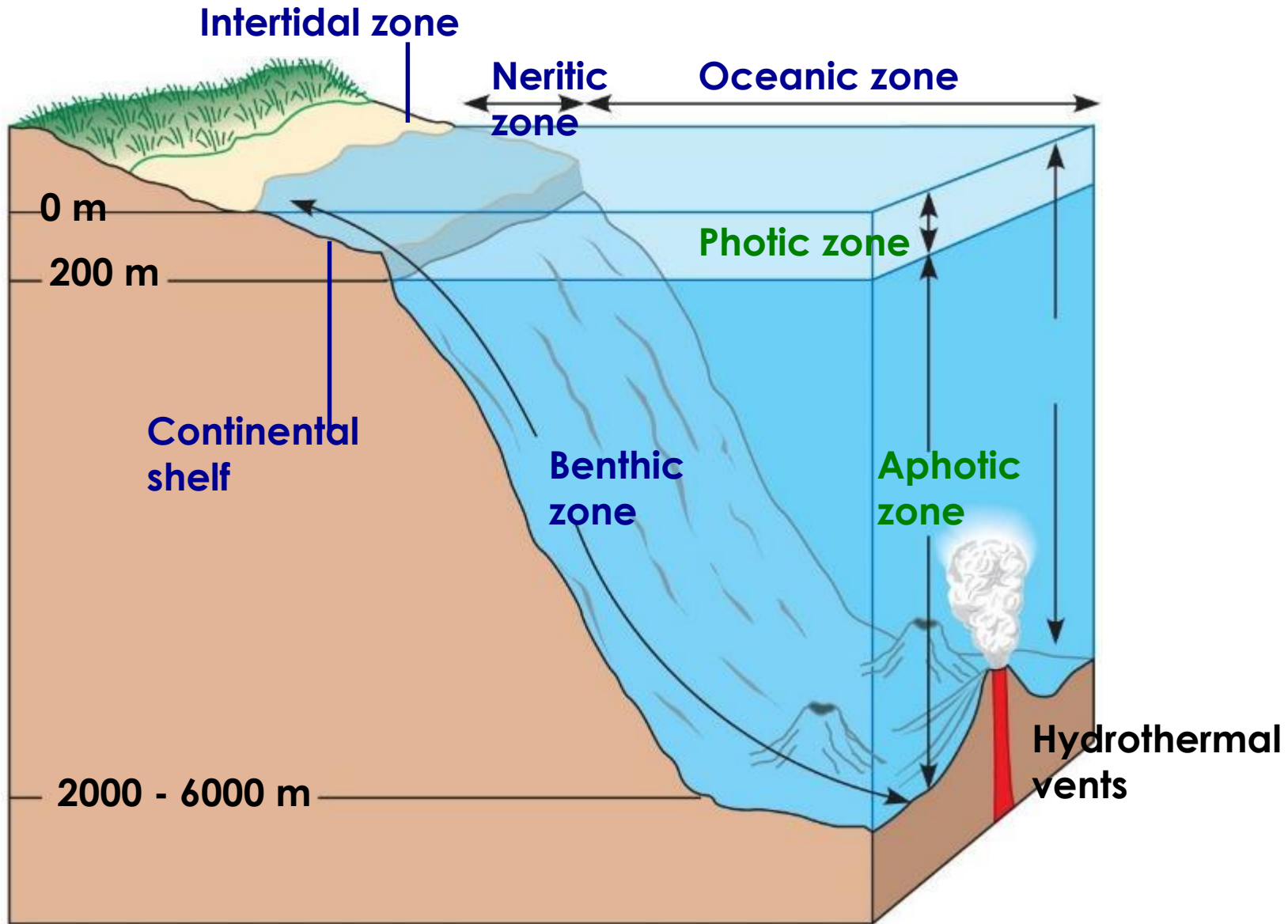
- Oceans

- Can be divided into 2 main life zones

1. Photic zone- Sunlight penetrates

2. Aphotic zone- NO sunlight

# Ocean Zones



# Photic Zone

- Above 100 meters
- Sunlight penetrates
- Plant life and animal life is abundant



# Aphotic Zone

Sunlight DOES  
NOT penetrate

There are no plants

Animal life is highly  
specialized



# Aphotic Zone

Many of the creatures of the deep ocean have a special adaptation known as bioluminescence

