



The collage consists of nine square images arranged in a 3x3 grid. Top row: 1. A savanna landscape with acacia trees and animals in a dry, yellowish-brown field. 2. A river flowing over rocks, with green algae on the water's edge and mountains in the background. 3. A dense forest of tall evergreen trees covered in snow. Middle row: 1. A wide, rolling green plain under a clear sky. 2. An underwater scene showing a coral reef with many small, colorful fish swimming above it. 3. A vast, sandy desert landscape with large, smooth sand dunes. Bottom row: 1. A tundra or moorland area with low-lying orange and brown vegetation, rocks, and distant mountains. 2. A close-up view of a lush, dense tropical forest with various shades of green foliage. 3. A forest in autumn, with many trees having turned bright red, orange, and yellow leaves.

BIOMES AND ECOSYSTEMS

Learning Objectives:

- Determine the major types of biomes.
- Explain the ecological significance of the biomes
- Analyze the impact of biomes

Types of Biomes

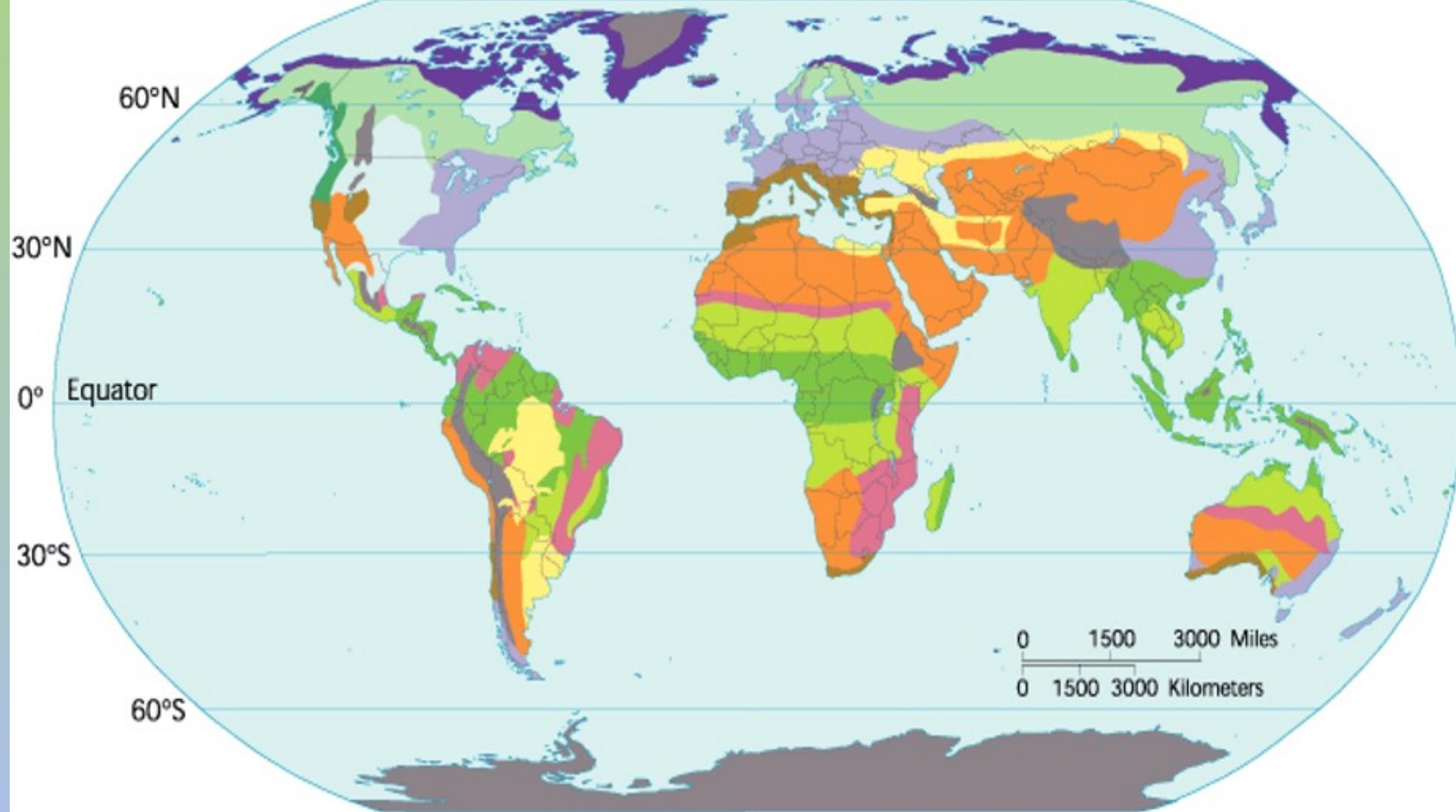


Biomes?

- group of land ecosystems with similar climates and organisms
- Classifications:
 - ❑ Land
 - ❑ Aquatic

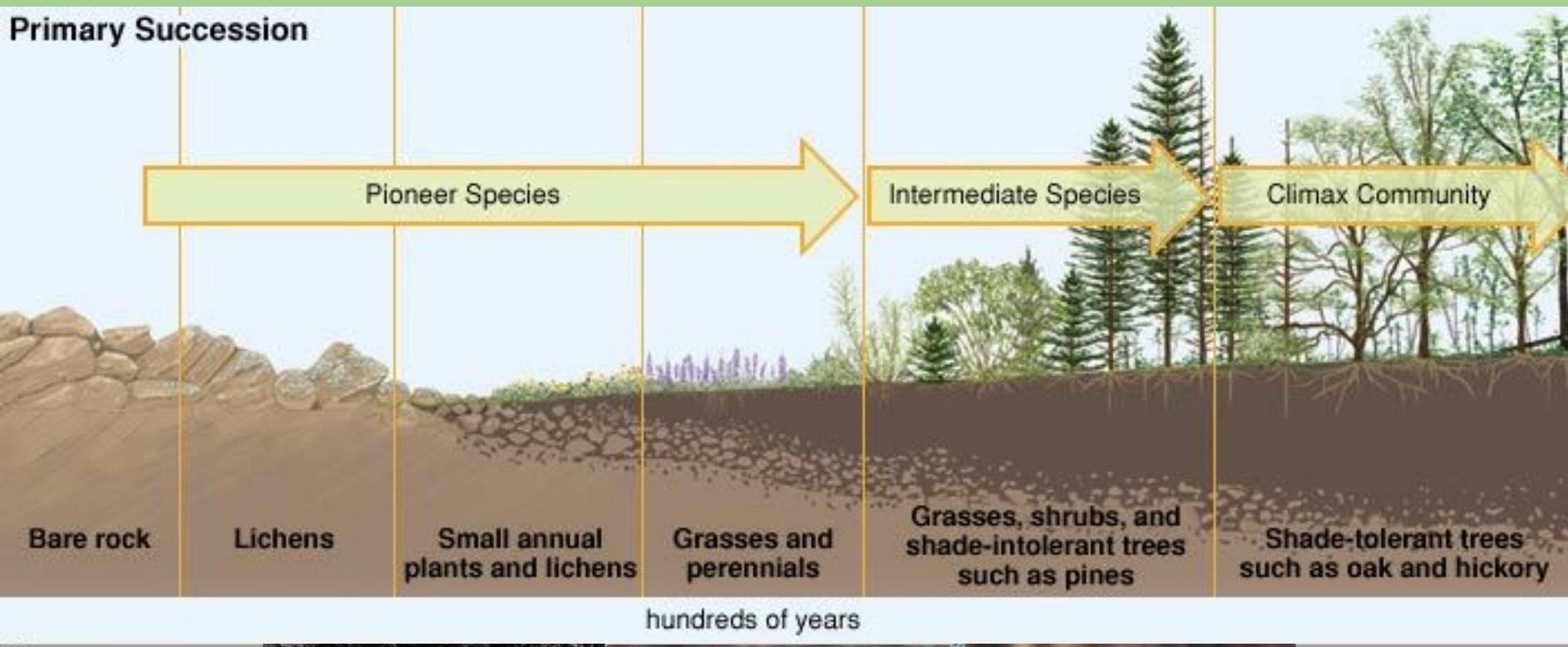
Factors affecting Climate

- Climate in an area is affected by two main things
 - Direct sunlight (heat)
 - Precipitation
- Climate directly affects the type of biome
 - Biome is an environment with specific vegetation and organisms.



Tropical rain forest	Temperate grassland	Temperate forest	Tundra
Tropical dry forest	Desert	Northwestern coniferous forest	Mountains and ice caps
Tropical savanna	Temperate woodland and shrubland	Boreal forest (Taiga)	

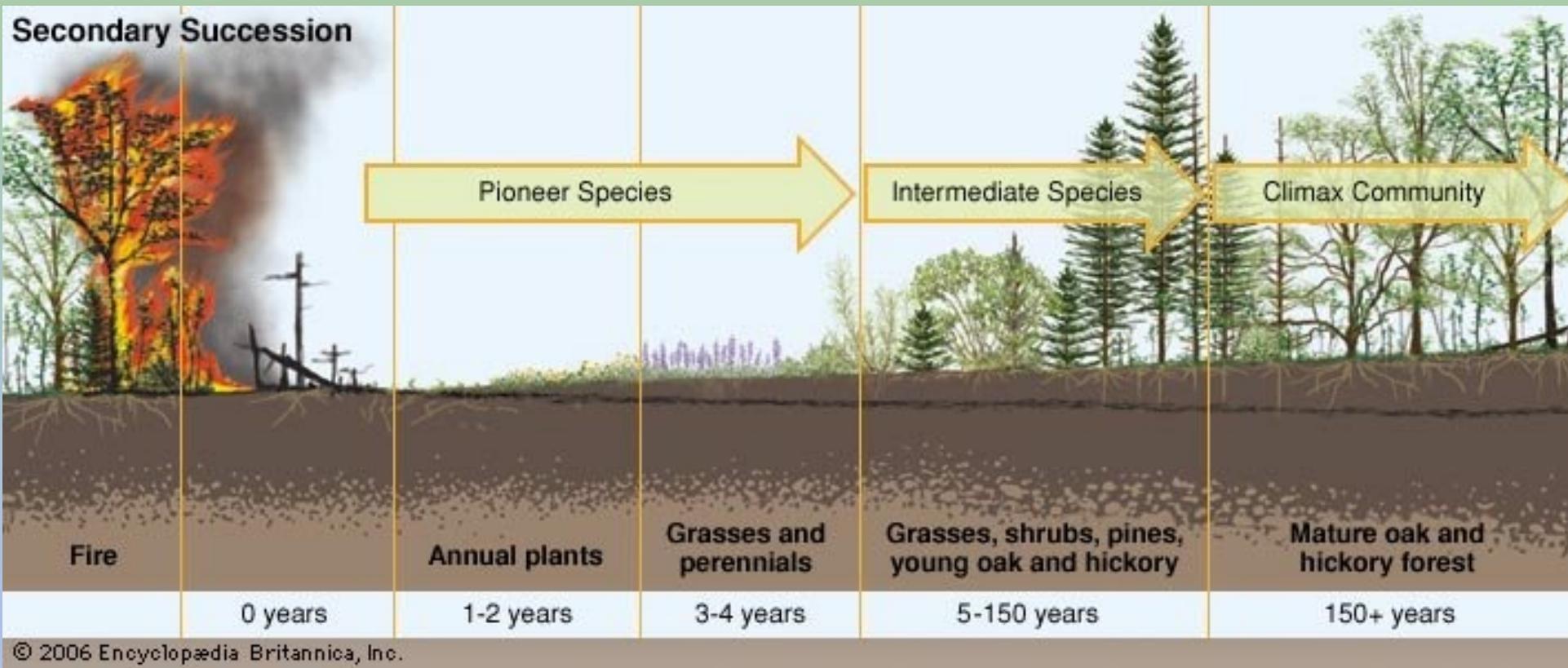
Land Biomes



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Secondary Succession



Land Biomes

- Some of the land biomes
 - ❑ Tundra
 - ❑ Taiga
 - ❑ Temperate deciduous forest
 - ❑ Grassland
 - ❑ Tropical rain forest
 - ❑ Desert

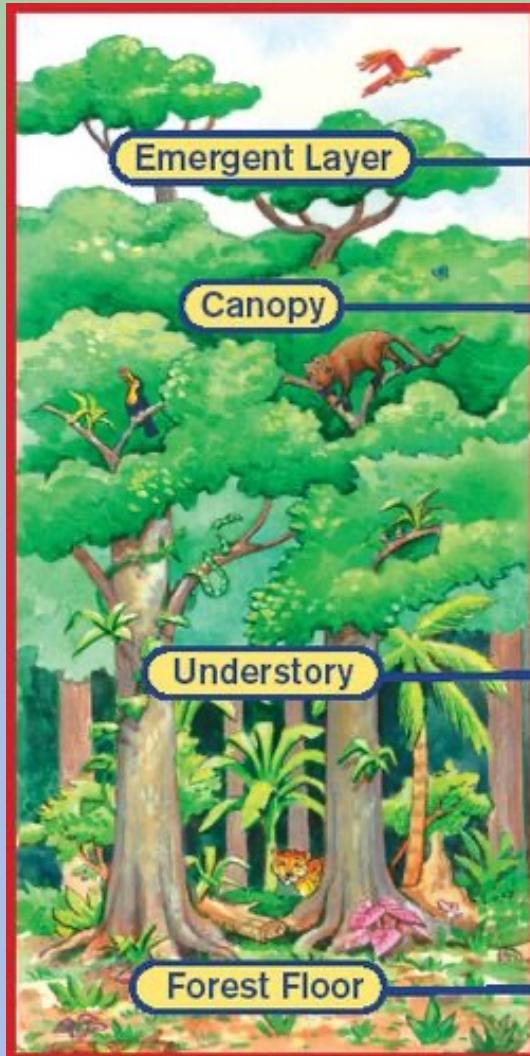
N FORESTS

- 2 main types of rain forests:
 - Temperate Rain Forests
 - Tropical Rain Forests





Layers of the Rainforest



Birds, bats, and butterflies live in the tops of the tallest trees. That is called the **emergent layer**.

In the tops of the shorter trees, or **canopy**, you can find animals such as toucans and monkeys.

Snakes, red-eyed tree frogs, and other animals live in the **understory**, or lower branches.

Animals such as jaguars can be found on the dark **forest floor**.





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Temperate Rainforest



Temperate Rainforests

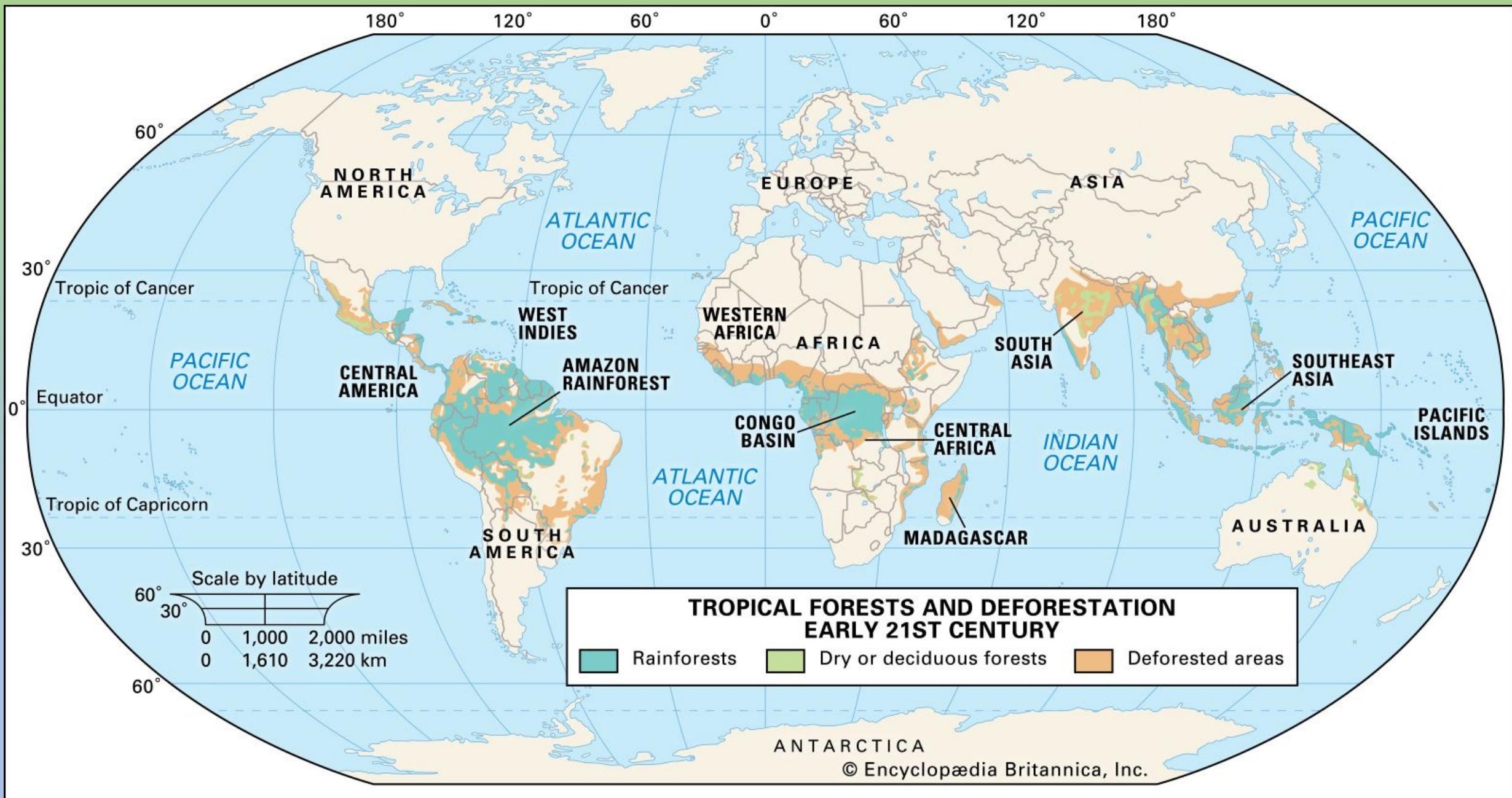


Animals of the Pacific Temperate Rainforest



TROPICAL RAINFORESTS





DESERTS



GRASSLANDS

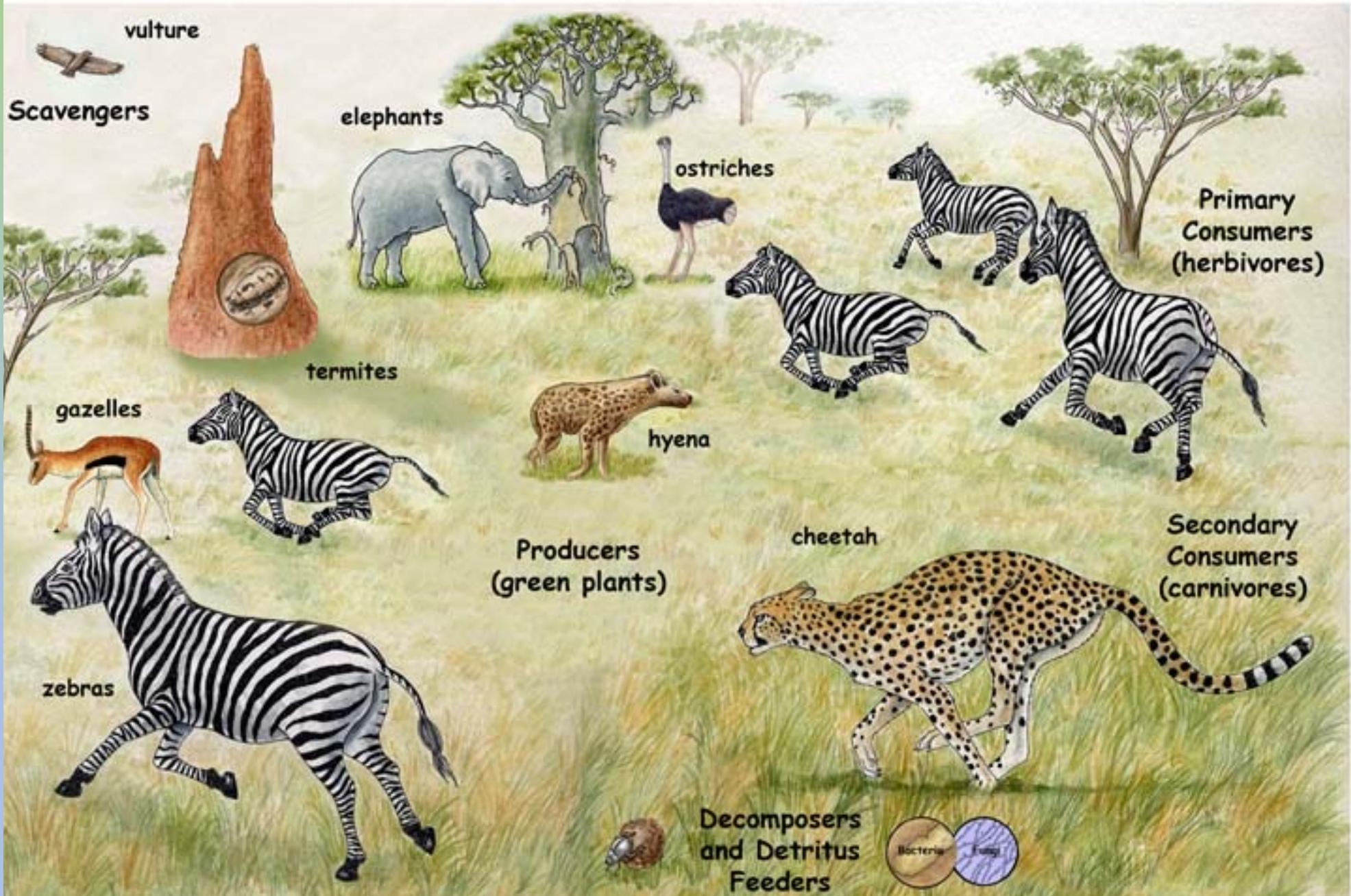
- Water catchments
- Biodiversity reserves
- Recreational activities





Savanna: Grassland that is located closer to the equator than prairies.

African Savannah



DECIDUOUS FOREST



TROPICAL RAINFOREST VERSUS DECIDUOUS FOREST

Visit www.PEDIAA.com



TROPICAL RAINFOREST

Tropical rainforests are forests with mostly evergreen trees and a high amount of rainfall, located in warm regions of the world

Occur in the equatorial zone between the Tropic of Cancer and Tropic of Capricorn

Remain warm all year and receive high rainfall

Plants do not shed leaves annually



DECIDUOUS FOREST

Deciduous forests are forests characterized by plants that shed their leaves annually

Occur in the temperate regions: western Eurasia, eastern North America, and northeastern Asia

Experience the four seasons: summer, spring, autumn, and winter

Plants shed leaves annually

Deciduous Forest Animals

Temperate Deciduous Forest Animals



American Black Bear

Elephant

Salamander

Opossum

Moose

Bobcat



Porcupine

Snowy Owl

Squirrel

Red Fox

Raccoon

Chipmunk



Tiger

Weasel

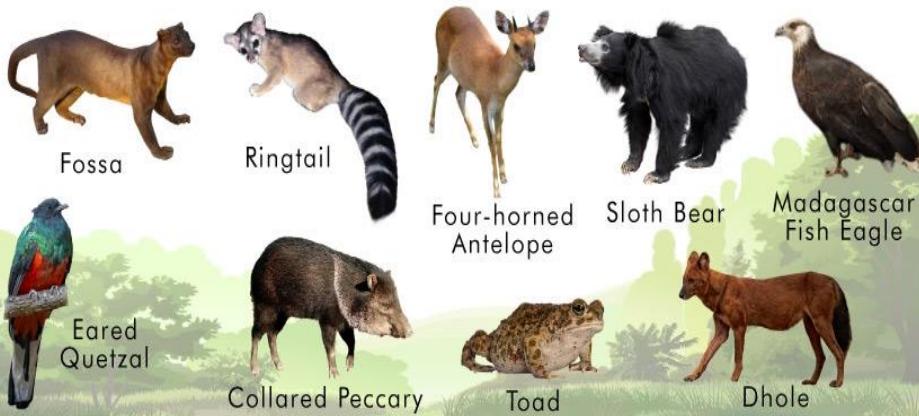
Pileated Woodpecker

Warbler

Deer

Rabbit

Tropical Deciduous Forest Animals



Fossa

Ringtail

Four-horned Antelope

Sloth Bear

Madagascar Fish Eagle

Eared Quetzal

Collared Peccary

Toad

Dhole

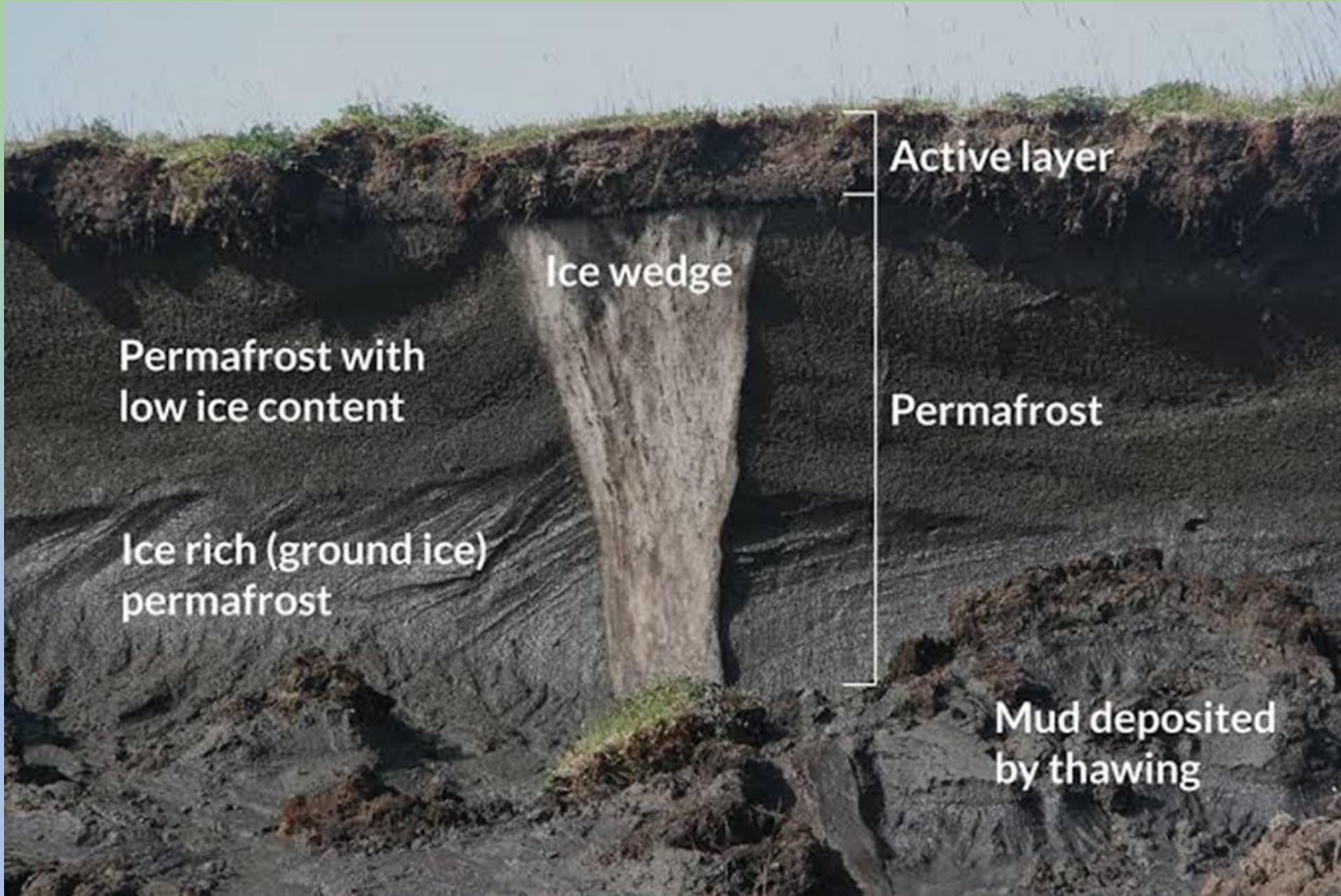
BOREAL FOREST (*taiga*)





Taiga comes from a Russian word for the marshy pine forest.

TUNDRA





PERMAFROST



Tundra Species



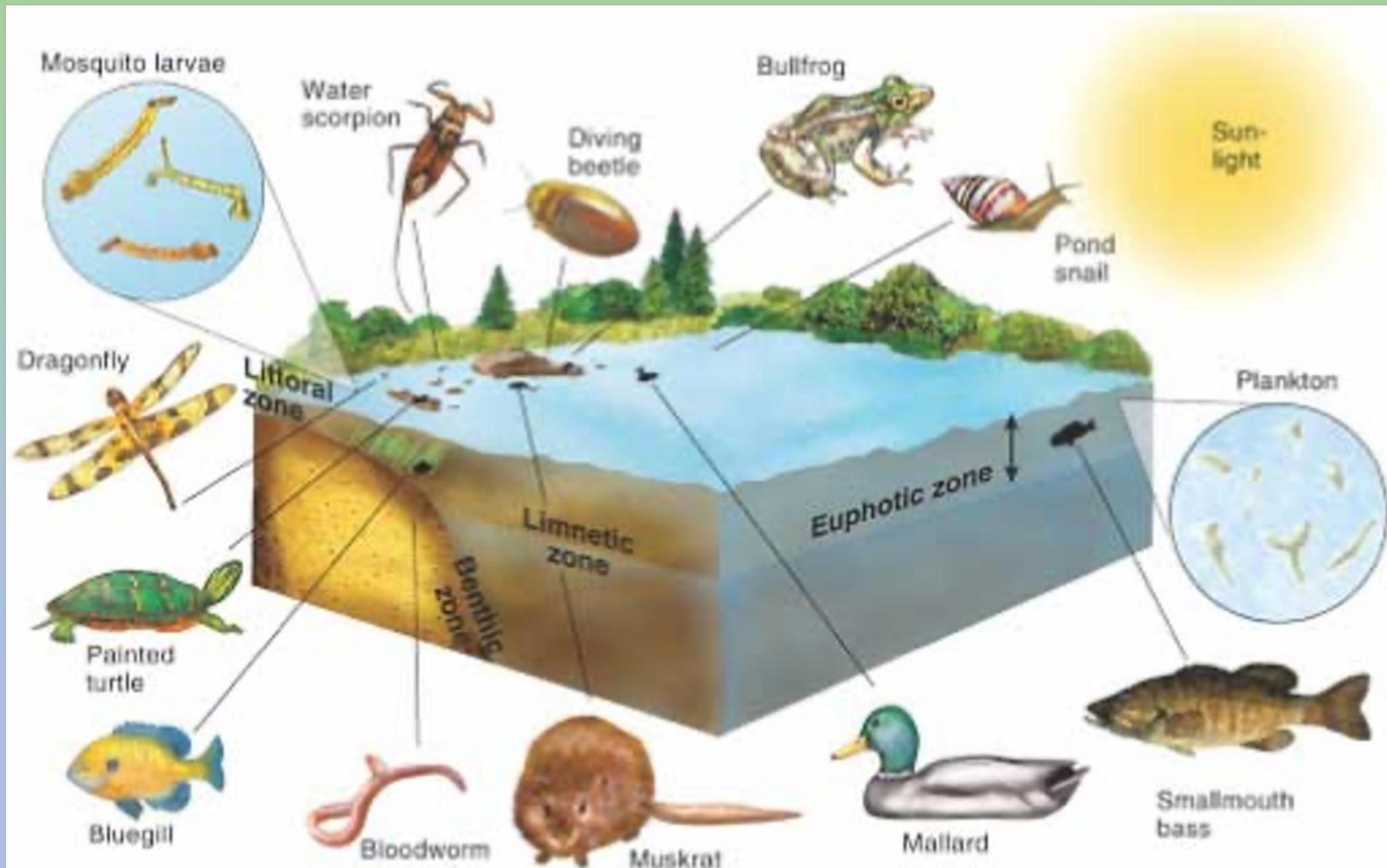
Marine Biomes

- Includes all of the ocean
- Marine biomes are divided into 4 subcategories
 - Intertidal zone
 - Neritic zone
 - Open-sea zone
 - Deep-sea zone

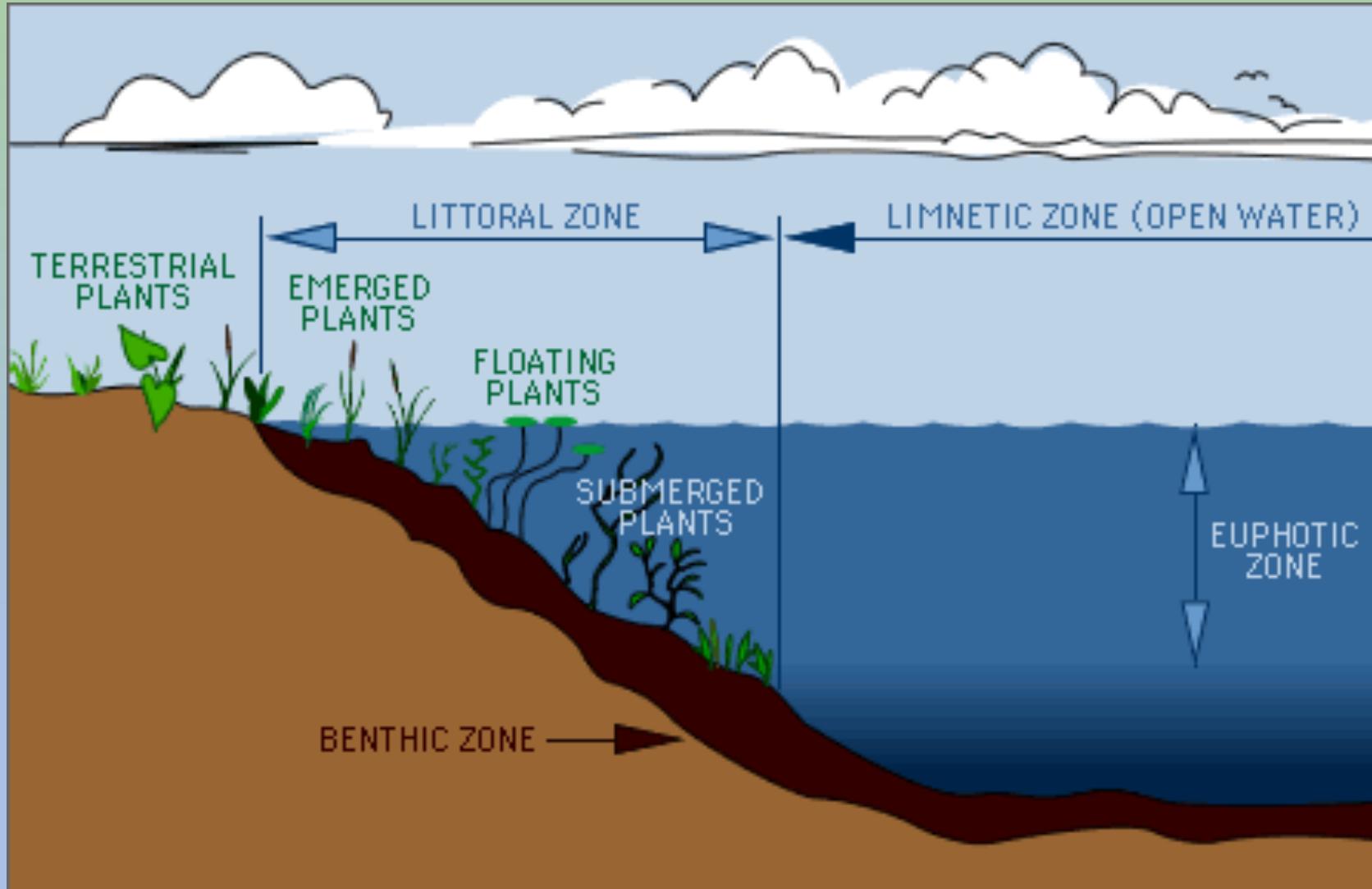
FRESHWATER ECOSYSTEMS



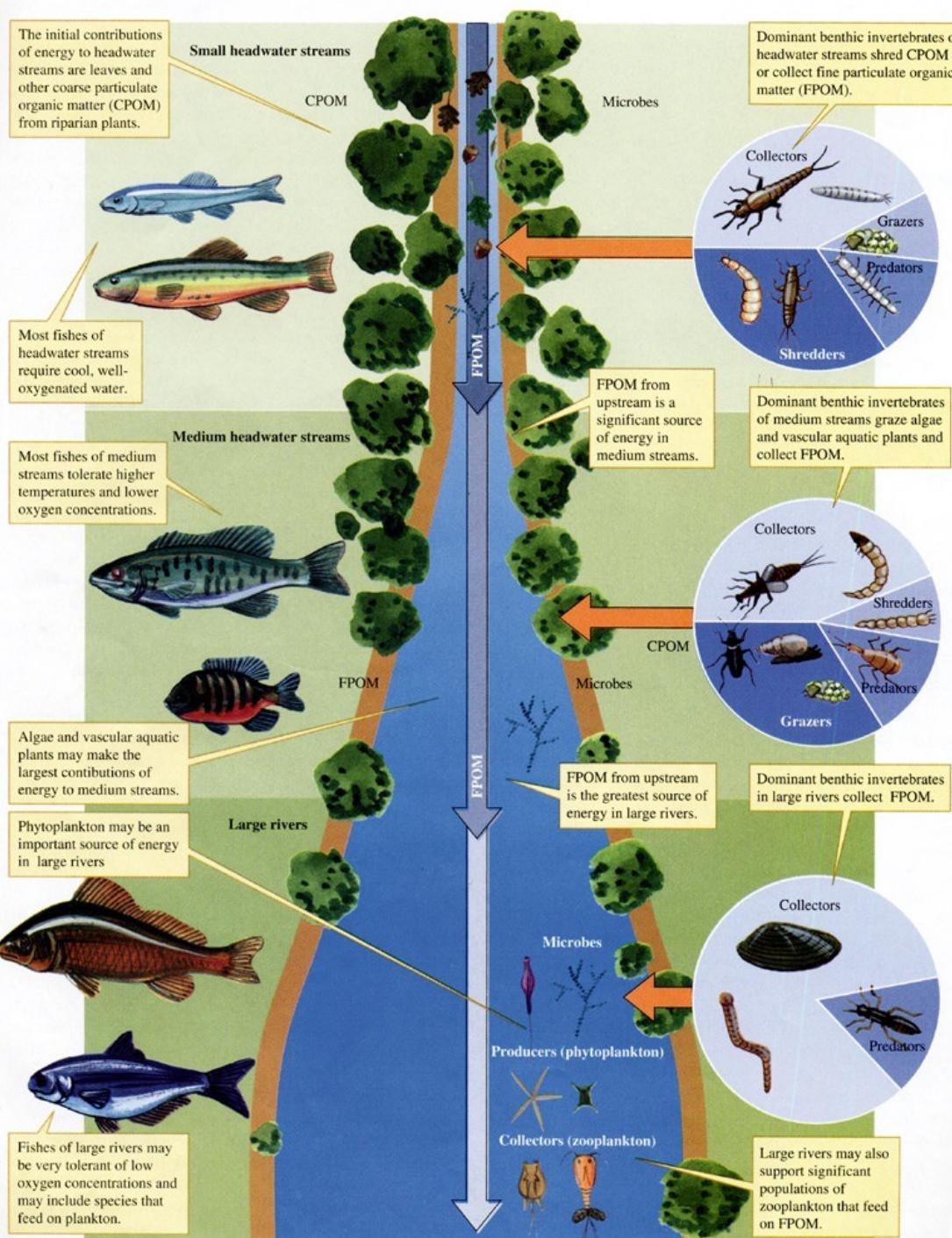
Lake Zonation



Lake Zonation



Freshwater Species



MARINE ECOSYSTEMS

- Marine ecosystems include estuaries, intertidal zones, neritic zones, and the open ocean.

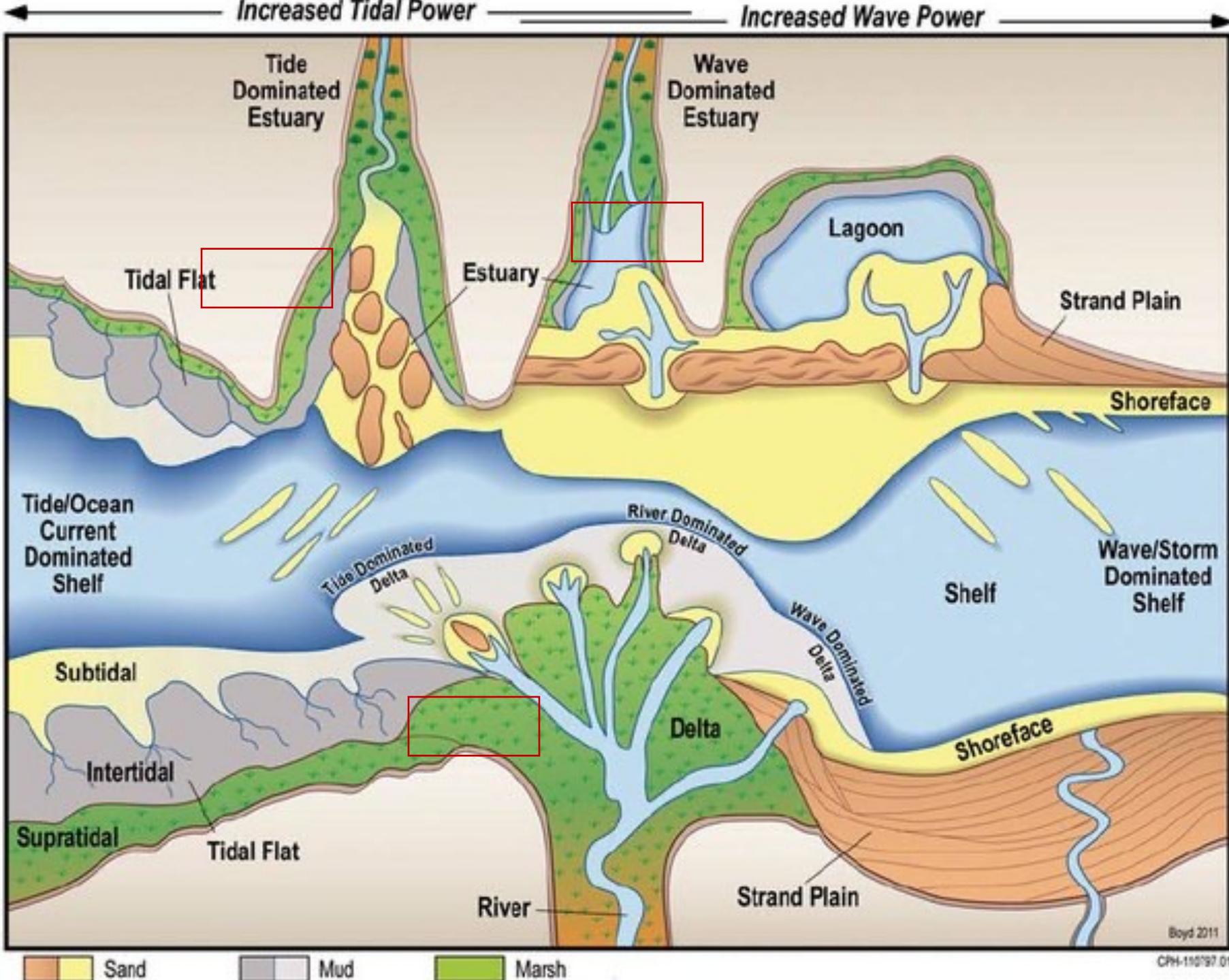


ESTUARIES



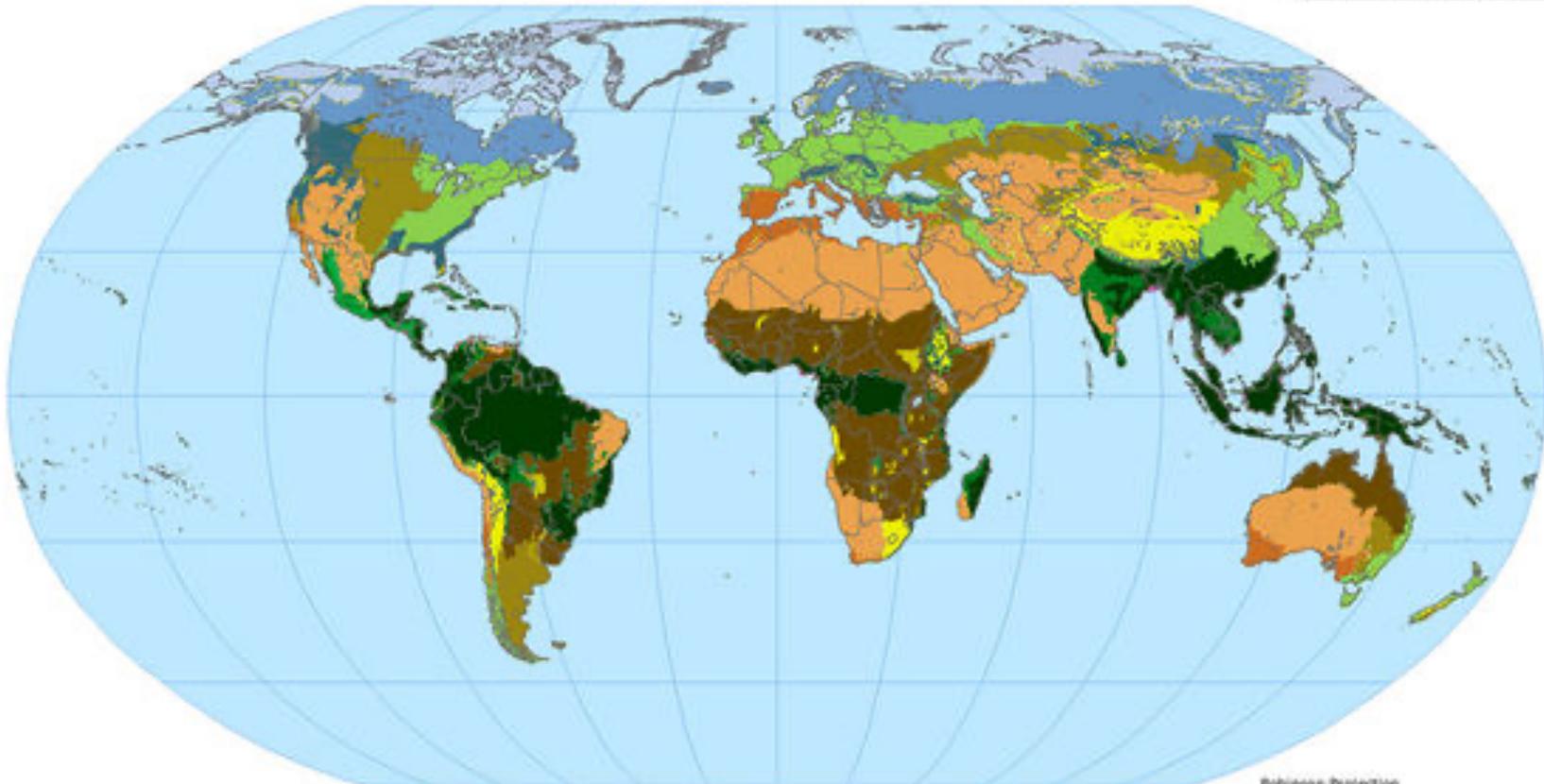
Estuaries

- Estuaries are the boundaries between freshwater and saltwater.
- Since it is a mix of the two, a variety of organisms can be supported.



Biomes

Global



Global Biomes data were obtained from the World Wildlife Fund (WWF) Terrestrial Ecoregions of the World dataset, February, 2006. The data depict global terrestrial vegetation biodiversity patterns for the world's 825 ecoregions and 14 biomes. Biome classes 99 (Rock & Ice) and 98 (Lake) from the WWF data were recoded to match the dominant surrounding biome class.

Source Information:

<http://www.worldwildlife.org/science/ecoregions/terrestrial.cfm>.



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Source: Center for International Earth Science Information Network (CIESIN).
Columbia University Population, Landscape, and Climate Estimates (PLACE).
Further information available at: <http://sedac.ciesin.columbia.edu/place/>

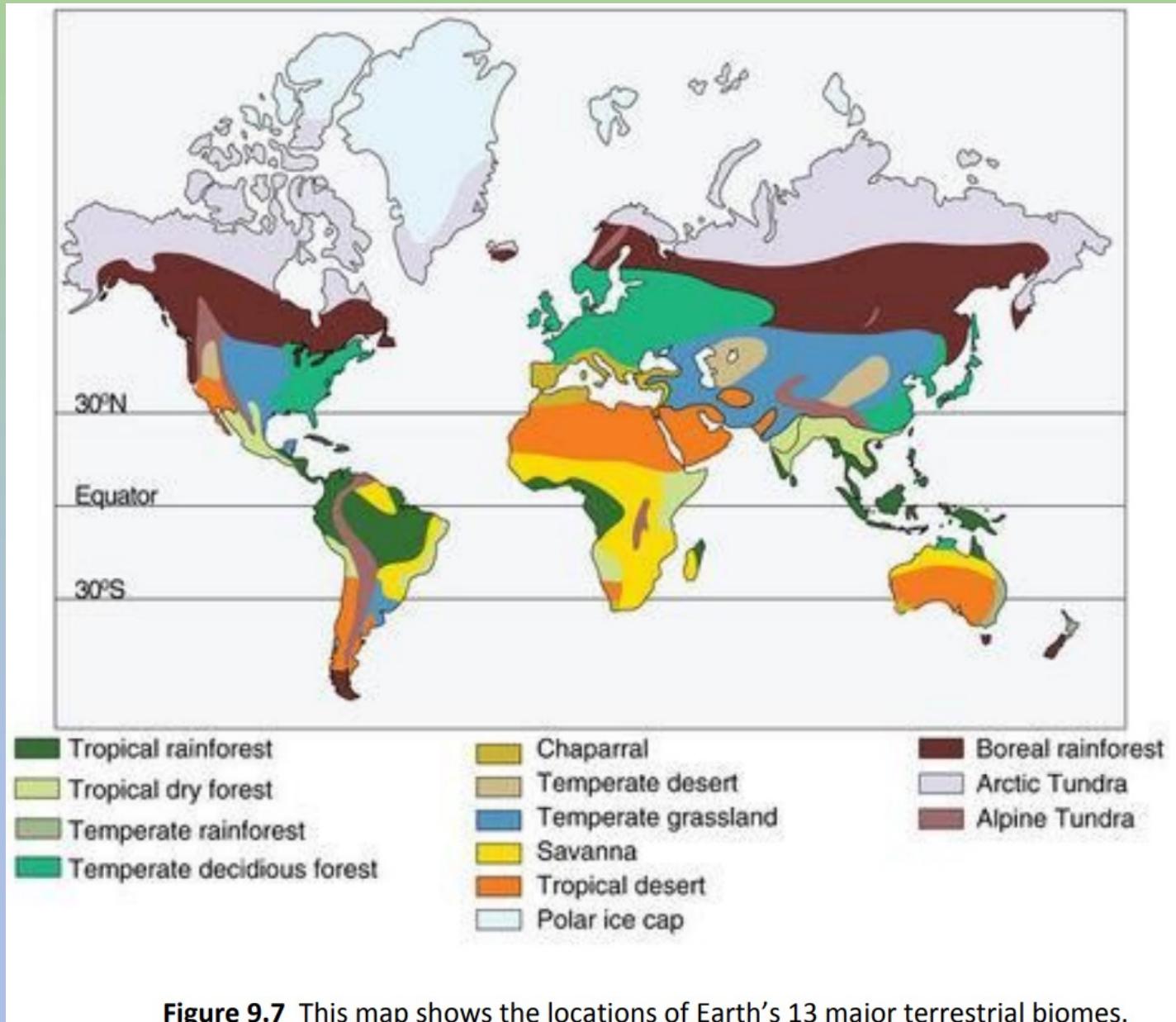
Biomes
Tropical, Subtropical Moist Broadleaf Forest
Tropical, Subtropical Dry Broadleaf Forest
Tropical, Subtropical Conifer Forest
Temperate Broadleaf, Mixed Forest
Temperate Conifer Forest
Boreal Forest/Taiga
Tropical, Subtropical Grasslands, Savannas, Shrublands
Temperate Grasslands, Savannas, Shrublands
Flooded Grasslands, Savannas
Montane Grasslands, Shrublands
Tundra
Mediterranean Forest, Woodlands, Scrub
Deserts, Xeric Shrublands
Mangroves

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Terrestrial Biomes



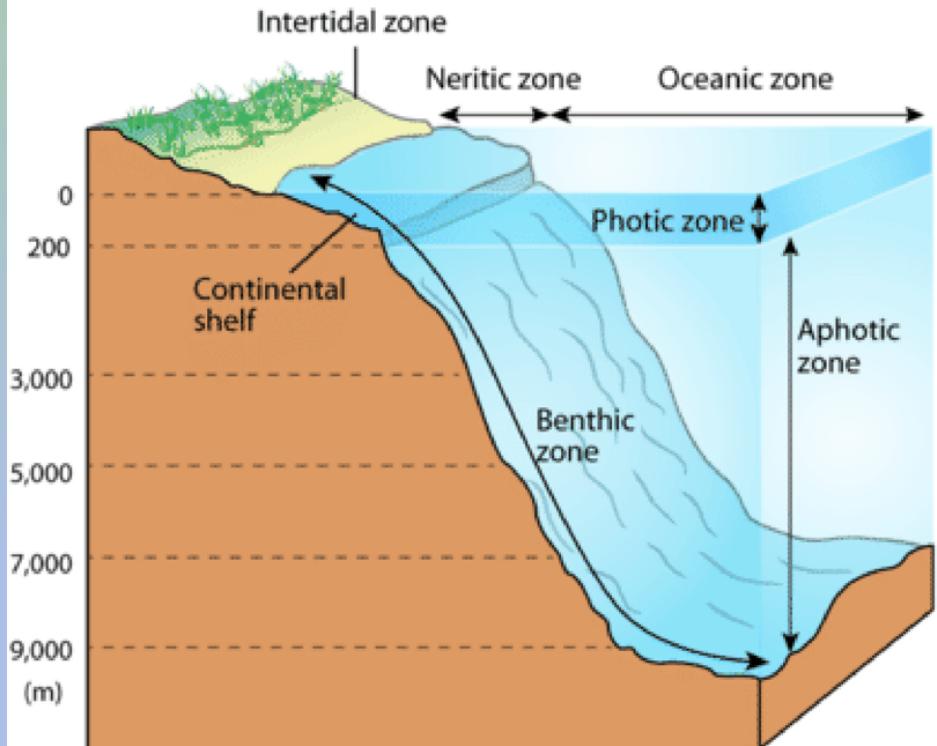
Terrestrial Biomes

Table 9.3 Summary of ten of the major terrestrial biomes characteristics.

Ten Major Biomes						
Biome	Precipitation	Temperature	Soil	Diversity	Trees	Grasses
Tropical Rain Forest	high	hot	poor	high	dense	sparse
Tropical Dry Forest	variable	mild	rich	moderate	medium	medium
Tropical Savanna	variable	mild	clay	moderate	sparse	dense
Desert	low	variable	poor	moderate	sparse	sparse
Temperate Grassland	moderate	summer hot	rich	moderate	absent	dense
Temperate woodland and Shrubland	summer low, winter moderate	summer hot	poor	low	medium	medium
Temperate Forest	moderate	summer moderate, winter cold	rich	high	dense	sparse
Northwestern Coniferous Forest	high	summer mild, winter cold	rocky, acidic	low	dense	sparse
Boreal Forest	moderate	summer mild, winter cool	poor, acidic	moderate	dense	sparse
Tundra	low	summer mild, winter cold	poor	low	absent	medium

Aquatic Biomes

Ocean Zones



The intertidal zone

is closest to shore. At high tide it is covered with water. At low tide, it is exposed to air. Living things must adapt to changing conditions and moving water in this zone.

The photic zone

is the top 200 meters of water. This zone has enough sunlight for photosynthesis. That's why there are more living things here than in the aphotic zone.

The neritic zone

lies over the continental shelf. The water is not very deep. There are plenty of nutrients and sunlight. Many organisms live in this zone.

The aphotic zone

is water below 200 meters. There isn't enough sunlight here for photosynthesis. Living things must eat whatever drifts down from above or each other. That's why there are fewer living things here than near the surface.

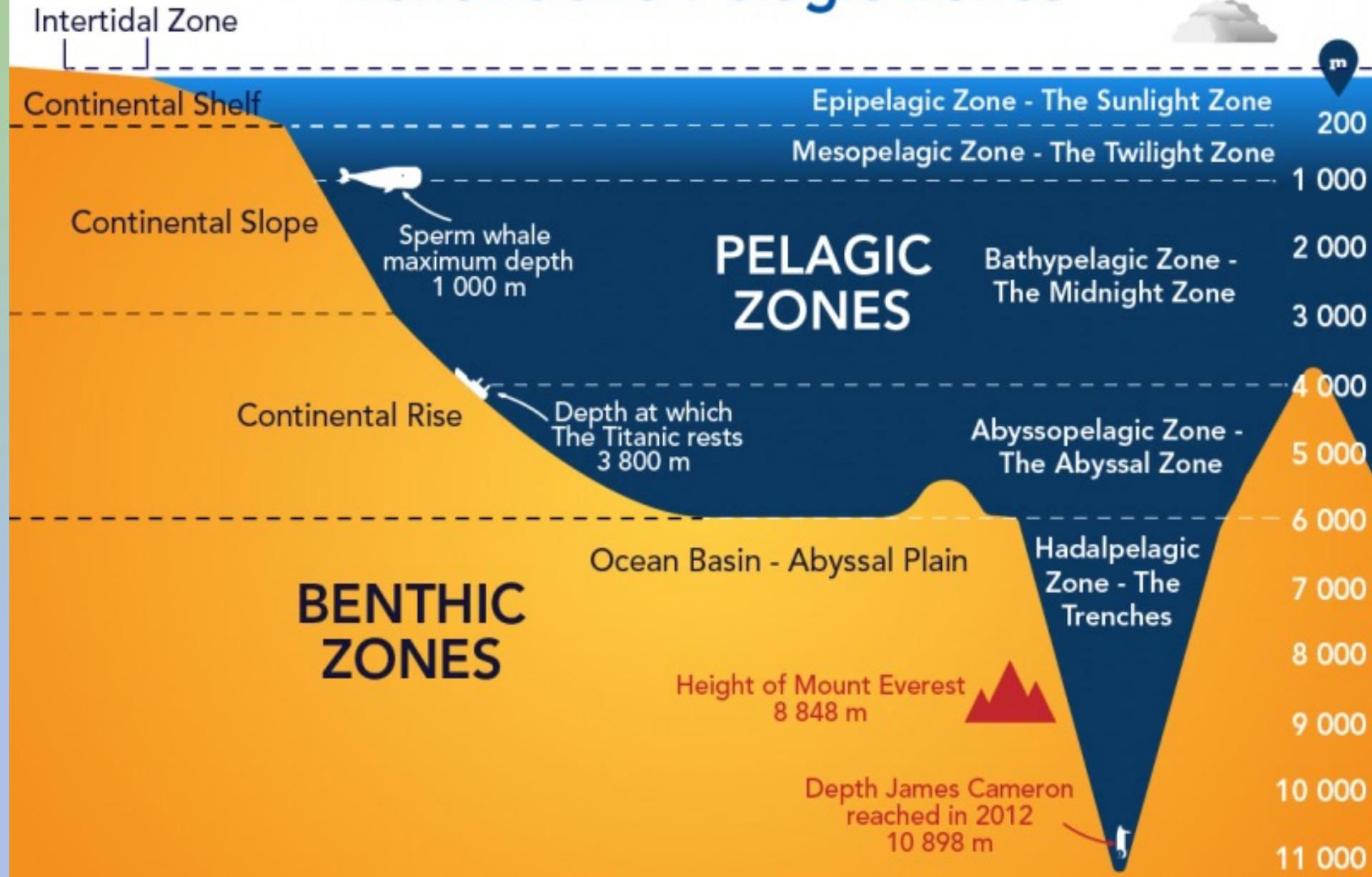
The oceanic zone

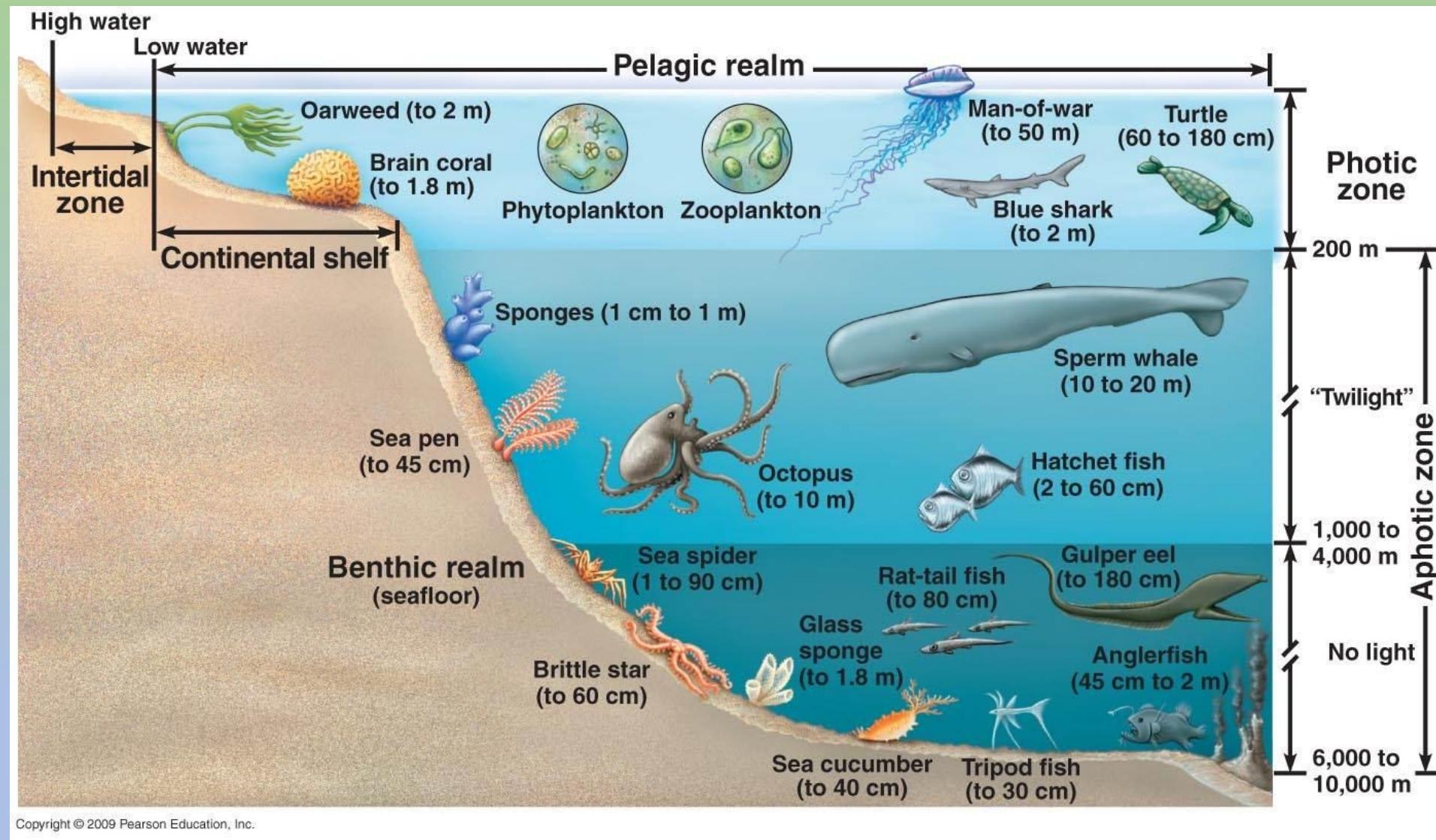
is the open ocean out past the continental shelf. The water may be very deep. Nutrients may be scarce. Fewer organisms live in this zone.

The benthic zone

is on the ocean floor. The ocean floor drops as you move away from the continents. There are fewer living things on the ocean floor where the water is very deep.

Benthic and Pelagic Zones





Biomes

Aquatic

- Marine
 - Intertidal zones
 - Oceanic Pelagic
 - Coral reefs
 - Marine benthic zone
- Freshwater
 - Lakes
 - Wetlands
 - Streams and rivers
 - Estuaries

Terrestrial

- Tropical
- Desert
- Savanna
- Chaparral/
- Grassland
- Coniferous forest (taiga)
- Broadleaf forest (deciduous)
- Tundra (arctic)