

Exercise walk-through

1.3

Aquatic Biomes

AP Environmental Science

Biomes

A **biome** is a large region set by its climate: terrestrial by temperature & precipitation; aquatic by salinity.

Biomes band by latitude:
rainforest at the equator →
tundra at the poles.



Tropical rainforest: high temp and precip

Two biomes at opposite ends of the precipitation scale

Tropical rainforest

Hot and wet all year: dense layered plant life and the richest biodiversity of any land biome.

Desert

The dry end: sparse, widely spaced plants, water-storing tissue and animals active at night.

Why they differ

Terrestrial biomes are set mainly by temperature and **precipitation** – the same sunlight, a different water budget.

Deserts, grasslands, tropical rainforest, temperate forest, taiga and tundra: place any of them by naming its temperature *and* its rainfall.

Aquatic biomes cover more of Earth than land does

freshwater

streams, lakes, wetlands – low **salinity**

marine

open ocean, coral reefs, estuaries – high salinity

estuary

where a river meets the sea; nutrient-rich and **exceptionally productive**

coral reef

warm, shallow, sunlit – the most **biodiverse** system

marine

Aquatic biomes are sorted by **salinity, sunlight and nutrients** – the same three variables, in every question about them.

Exercises 2.1-2.3

2.1 State the main difference between freshwater and marine biomes. [1]

2.2 Where is an estuary found? [1]

2.3 Name one factor that shapes an aquatic biome. [1]

Exercises 2.1-2.3

2.1 State the main difference between freshwater and marine biomes. [1]

2.1

- Salinity – freshwater has low salt, marine is salty

2.2 Where is an estuary found? [1]

2.2

- Where a river meets the sea

2.3 Name one factor that shapes an aquatic biome. [1]

2.3

- Any one: salinity, sunlight, temperature, nutrients, dissolved oxygen

Exercise 3.1

3.1 Estuaries are highly productive because they

[1]

☐

A have no sunlight

B are nutrient-rich where rivers meet the sea

C are very deep

D have no life

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3.1 B

- nutrient-rich where rivers meet the sea

Exercise 3.2 (a)

3.2 A coral reef is a highly biodiverse marine biome.

(a) State two conditions coral reefs require.

[2]

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(a)

- Warm, clear, shallow water (any two)

Exercise 3.2 (b)

3.2 A coral reef is a highly biodiverse marine biome.

(b) Explain why sunlight limits life in deep ocean water.

[2]

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(b) Explain why sunlight limits life in deep ocean water.

[2]

(b)

- Sunlight cannot penetrate deep water, so photosynthesis (and the producers it supports) is limited near the surface

Exercise 3.3

3.3 Explain why estuaries are described as important “nurseries” for marine life. [2]

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3.3

- They are nutrient-rich and sheltered, so many marine species breed and their young grow there before moving to the open sea