

# 1.3 Aquatic Biomes

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

Total: 10 marks

## Objective

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Build the skills to answer exam questions on **aquatic biomes**.

**You must be able to:**

- distinguish **freshwater** 淡水 and **marine** 海洋 systems
- describe productive zones (**estuaries** 河口, coral reefs)
- state the factors that shape aquatic biomes (salinity, sunlight, nutrients)

## 1 Worked examples

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Study these first. Each one shows the method for a question type used later —follow the steps and you can do the Practice and Exam-style questions yourself.

### ■ Freshwater and marine

**Aquatic biomes** cover most of Earth. **Freshwater** (streams, lakes, wetlands) has low salt; **marine** (open ocean, reefs, estuaries) is salty. They differ in **salinity**, **sunlight**, and **nutrients**.

### ■ Highly productive zones

- **Estuaries** —where rivers meet the sea; nutrient-rich and highly productive nurseries.
- **Coral reefs** —high biodiversity, need warm, clear, shallow water.

### ■ Factors that shape them

Sunlight (limits photosynthesis with depth), temperature, **salinity**, dissolved oxygen, and nutrient levels all determine what lives where.

### ■ A worked reasoning

An estuary is highly productive because rivers deliver nutrients and it is shallow enough for sunlight to reach the producers.

## 2 Practice

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Now apply the methods above.

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

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**2.2** Where is an estuary found? [1]

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

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### 3 Exam-style questions

**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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**3.2** A coral reef is a highly biodiverse marine biome.

(a) State two conditions coral reefs require. [2]

(b) Explain why sunlight limits life in deep ocean water. [2]

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

### 4 Go further

You are now ready for the real exam questions on this subtopic:

- work through the **1.3 Aquatic Biomes** lesson on the **Learn** page;
- read the **Aquatic Biomes** section of the AP Environmental Science handout on the **Know** page.

## Solutions

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**2.1** Salinity —freshwater has low salt, marine is salty.

**2.2** Where a river meets the sea.

**2.3** Any one: salinity, sunlight, temperature, nutrients, dissolved oxygen.

**3.1 B** —nutrient-rich where rivers meet the sea.

**3.2** (a) Warm, clear, shallow water (any two). (b) Sunlight cannot penetrate deep water, so photosynthesis (and the producers it supports) is limited near the surface.

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