NO PREP

Biodiversity Hotspots in the Ocean

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Name: Period: Date:

Biodiversity Hotspots in the Ocean

The Importance of Marine Biodiversity

The ocean is home to millions of species, ranging from microscopic plankton to the largest whales. Areas known as biodiversity hotspots are especially rich in life. These regions contain unusually high numbers of species and often serve as breeding grounds, nurseries, or feeding areas. Protecting them is essential because they support global fisheries, stabilize ecosystems, and provide resources humans depend on. Marine biodiversity is unevenly distributed. Some regions teem with life because of nutrient availability, warm waters, or habitat variety. Others, such as the deep open ocean, have lower diversity. Understanding hotspots helps scientists prioritize conservation and highlights the interconnectedness of global ecosystems.

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Coral Reefs, Estuaries, and Mangroves

Coral reefs are among the most famous biodiversity hotspots. Built by coral polyps and supported by their algae partners, they host thousands of fish, invertebrates, and plants. Though reefs cover less than 1% of the ocean floor, they may house 25% of all marine species. Estuaries, where rivers meet the sea, are also hotspots. The mix of fresh and salt water creates a nutrient-rich environment that supports juvenile fish, migratory birds, and shellfish. Estuaries act as nurseries, protecting young species before they move into the open ocean. Mangrove forests form another hotspot, with their tangled roots sheltering fish, crabs, and shrimp. Mangroves also stabilize coastlines, reduce erosion, and serve as buffers against storms. Together, coral reefs, estuaries, and mangroves form interconnected systems that sustain biodiversity on a global scale.

Why Protect Hotspots?

Biodiversity hotspots play critical roles in ecological balance, fisheries, and coastal protection. They act as centers of productivity, producing food and oxygen while storing carbon. Human well-being is directly tied to the survival of these regions. By

conserving hotspots, we protect not only marine species but also the services these ecosystems provide to people worldwide.

Key Information: Table: Examples of Marine Biodiversity Hotspots

Hotspot	Key Features	Importance
Coral reefs	Built by corals and algae	Support 25% of marine species
Estuaries	Fresh and salt water mixing	Nurseries for fish and shellfish
Mangroves	Root networks along coastlines	Storm protection, fish habitat
Great Barrier Reef	Largest reef system on Earth	Tourism, fisheries, biodiversity
Seagrass beds	Underwater meadows of seagrass	Shelter and feeding grounds

Case Study: The Great Barrier Reef (Excerpt)

The Great Barrier Reef, off the coast of Australia, is the largest coral reef system in the world, stretching over 1,400 miles. It is so vast it can be seen from space. Within its waters live more than 1,500 species of fish, 400 species of coral, and countless invertebrates, marine mammals, and seabirds. This reef supports not only marine life but also human economies, attracting millions of tourists annually and providing food resources to local communities. However, the reef faces major threats from climate change, coral bleaching, pollution, and overfishing. Rising sea temperatures have triggered mass bleaching events, killing large sections of coral. Scientists warn that without rapid conservation action, the reef may lose much of its biodiversity within the next century. The Great Barrier Reef illustrates both the richness of marine hotspots and their fragility in the face of human activity.

1. Why is the Great Barrier Reef considered a biodiversity hotspot?

_____

_____

2. What threats currently endanger the Great Barrier Reef?

_____

_____

Multiple Choice

1. What makes biodiversity hotspots unique?
    a) They are found only in cold polar waters near the ice
    b) They contain unusually high species diversity
    c) They are areas with no predators
    d) They have the deepest waters

2. Which of the following is NOT a biodiversity hotspot?
    a) Deep open ocean
    b) Coral reefs
    c) Mangrove forests
    d) Estuaries

3. What ecosystem service do mangroves provide?
    a) Whale migration routes
    b) Storm protection and habitat
    c) Photosynthesis for coral
    d) Saltwater desalination and purification

Matching

Write the letter of the correct definition on the line next to each term.

Term	Definition
1. ___ Coral reefs	A) Largest reef system visible from space
2. ___ Estuaries	B) Host 25% of all marine species
3. ___ Mangroves	C) Provide nurseries for young species
4. ___ Great Barrier Reef	D) Underwater meadows sheltering fish
5. ___ Seagrass beds	E) Protect coasts with root systems

Fill-in-the-Blank

1. Coral reefs cover less than 1% of the ocean floor but house _____ of marine species.

2. Estuaries are nutrient-rich because they mix _____ and salt water.

3. The largest coral reef system in the world is the _____ Barrier Reef.

Short Answer

Answer each question in 2-4 complete sentences.

1. Why are estuaries considered nurseries for marine species?

_____

_____

_____

2. How do human activities threaten biodiversity hotspots?

_____

_____

_____

3. Explain why conserving hotspots is important for humans as well as marine species.