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The Sour Side of the Sea: Understanding Ocean Acidification and Its Impact on Marine Life



The ocean, often referred to as the Earth's "blue heart," plays a vital role in our planet's health. It's not just a vast expanse of water; it's a dynamic ecosystem teeming with life. However, a silent threat called ocean acidification is quietly affecting this delicate

balance. In this reading passage, we will explore the concept of ocean acidification and its far-reaching impacts on marine life.

What is Ocean Acidification?

Ocean acidification is a process that occurs when carbon dioxide (CO₂) from the atmosphere dissolves in seawater, forming carbonic acid. This chemical reaction lowers the pH of the ocean, making it more acidic over time. This shift toward acidity disrupts the ocean's natural equilibrium.

The Carbon Cycle Connection

The carbon dioxide responsible for ocean acidification is a byproduct of human activities, such as burning fossil fuels (like coal, oil, and gas) and deforestation. The excess CO₂ in the atmosphere is absorbed by the ocean, where it initiates a series of chemical reactions. While this helps to mitigate climate change by reducing CO₂ in the air, it leads to other significant consequences underwater.

Impacts on Marine Life

- **Coral Reefs:** Ocean acidification poses a severe threat to coral reefs, often called the "rainforests of the sea." Corals are sensitive to changes in pH levels, and as the ocean becomes more acidic, it becomes harder for them to build their calcium carbonate skeletons. Weakening corals make them

Name _____

more susceptible to diseases and bleaching events, which can lead to the decline of entire reef ecosystems.

- **Shellfish and Mollusks:** Many marine species, including shellfish like oysters and mussels, as well as mollusks like snails and clams, rely on calcium carbonate to build their shells. In acidic waters, it becomes increasingly challenging for these creatures to form and maintain their protective shells, affecting their survival and the entire food web.
- **Fish and Food Chains:** Ocean acidification doesn't just affect the creatures with shells; it disrupts the entire marine food web. As smaller organisms like plankton and krill struggle to survive in more acidic waters, it has a domino effect on the larger species that depend on them for food, including fish, marine mammals, and seabirds.
- **Sensory Impairment:** Some studies suggest that ocean acidification can impair the sensory abilities of certain marine species. For example, young clownfish, which rely on sound and smell to find their way home, may have difficulty navigating in more acidic waters. This can lead to reduced survival rates.

Combating Ocean Acidification

Addressing ocean acidification requires global efforts to reduce CO₂ emissions, which is not only beneficial for the ocean but also for mitigating climate change. Additionally, scientists are studying how certain marine organisms can adapt to more acidic conditions and exploring ways to protect vulnerable ecosystems like coral reefs.

Ocean acidification is a serious and often overlooked consequence of human activities. Its impact on marine life, from the smallest plankton to the largest whales, is a critical issue that deserves our attention and action. By understanding the causes and consequences of ocean acidification, we can work together to protect the ocean's delicate balance and the incredible diversity of life it sustains.

