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Carbon Sequestration in Mangrove Finfish and Variation of Biodiversity and Immune Response Due to Ocean Acidification

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Editorial

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Editorial

Mangroves are highly productive ecosystems that play a crucial role in carbon sequestration. They store large amounts of carbon in their biomass and sediment. Mangrove finfish contribute to this process through various mechanisms:

Habitat Structure: Mangrove roots provide a complex structure, offering refuge and breeding grounds for various marine organisms, including finfish. This habitat complexity enhances biodiversity and contributes to the overall health of the ecosystem. Detritus-Based Food Web: Mangrove ecosystems are detritus-based, meaning they rely on the breakdown of organic matter (detritus) for nutrient cycling. Finfish, through their feeding activities, contribute to the breakdown of organic matter, releasing carbon that can be sequestered in the sediments. Blue Carbon: Mangroves are often referred to as "blue carbon" ecosystems because of their ability to sequester and store large amounts of carbon. Mangrove finfish contribute to this by participating in the food web and nutrient cycling processes, indirectly influencing carbon dynamics.

Ocean acidification is a consequence of the increased absorption of atmospheric carbon dioxide (CO_2) by seawater, leading to a decrease in pH. This phenomenon can have profound effects on marine ecosystems, including impacts on biodiversity and immune responses of marine organisms:

Biodiversity: Ocean acidification can affect the physiology and behavior of various marine species, including finfish. Some species may be more resilient, while others may face challenges such as reduced calcification rates in shells and skeletons, impacting their survival and abundance. Immune Response: Changes in pH and carbonate chemistry in the ocean can also influence the immune responses of marine organisms. Acidified conditions may stress the immune systems of certain species, making them more susceptible to diseases. Additionally, the impacts on prey species can have cascading effects on the entire marine food web. Species Interactions: Ocean acidification can alter the relationships between different species, affecting predator-prey dynamics and competition for resources. This can lead to shifts in community structure and biodiversity.