

DETAIL OF THE ART

SUMMARY

Blue carbon (C) stored from CO₂ (greenhouse gas) is also important for mitigating global warming. Seagrasses such as eelgrass are attracting attention because they store blue carbon very quickly and are widely distributed in shallow waters around the world. Seagrass communities are an essential part of the marine ecosystem as spawning and nursery grounds for a wide range of marine organisms.



Global warming is a major problem not only because of rising temperatures, but also because of frequent extreme weather events (climate change). Global warming and climate change is also making life difficult for humans and in some areas unlivable.

Green Carbon

Carbon (C) stored by plants (greens) from the air through photosynthesis and other processes. The storage of the greenhouse gas carbon dioxide (CO₂) in the form of carbon reduces the increase in the concentration of CO₂ in the atmosphere.

Blue Carbon

Blue carbon is green carbon in the ocean (blue). Marine plants and ecosystems also contribute significantly to mitigating global warming, but their habitat area has been declining.

90%

90% of the Earth's CO₂ exists in the oceans.

Shallow sea

Waters shallower than the continental shelf (200 m depth).

Land & Ocean

More carbon is stored annually in the ocean than on land during the course of a year. This shows that blue carbon is important in reducing global warming.

Oceanic zone

Deep waters offshore from the continental shelf.

20-30

Carbon storage rates per unit area are 20-30 times faster in marine vegetation (blue carbon) than in terrestrial vegetation (green carbon), especially in coastal areas such as seagrass beds, mangroves and salt marshes than in tropical rainforests.

SEAGRASS BED



Seagrass beds. Here, the dominant eelgrass community (eelgrass beds) in Japan is used as a representative of seagrass beds. Seagrasses, which are seed plants, spread their underground stems and roots through the sand and mud and store as blue carbon.



Seaweed beds. Seaweed has a lower carbon storage capacity than seagrass because its roots only attach to the surface of rocks and do not remain in the ground when it dies and decomposes. But it is equally very important as a spawning and growing ground for various organisms in the marine ecosystem.



Coral reefs. Corals are animals, but reef-building corals that live in shallow waters take in algae called zooxanthellae and live symbiotically with them. They store CO₂ through photosynthesis by the zooxanthellae.



Mangroves. Carbon storage rates are superior to seagrass beds, but habitats are restricted to tropical and subtropical areas. Mangrove forests are very important habitat for a variety of organisms.



Wetlands and marshes (salt marshes) on the coast. Wetlands and marshes on the coast, landforms which, due to their proximity to the sea, are either submerged in salt or brackish water or landfalls, depending on the time of day, due to tidal influences.



Phytoplankton. A generic term for many unicellular algae and so on. They perform photosynthesis and store C (carbon) from CO₂.



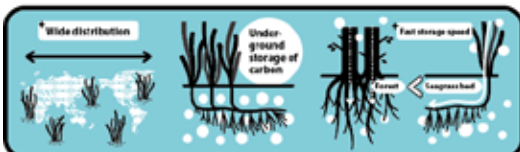
Carbon taken up from the atmosphere into plants is transferred through the food chain and food web to various organisms. Some of the dead organisms are deposited on the seabed and the carbon contained in them is also stored on the seabed.



Seagrass beds, mangroves and coral reefs provide spawning, hiding and feeding grounds for a variety of organisms and also function to calm waves. A healthy environment creates a rich ecosystem, and the amount of carbon stored in the ecosystem increases as the number of species and populations of organisms increases. The impact on the surrounding waters is also significant, as juvenile and adult fish move their living space offshore as they grow up.



Eelgrass beds and other seagrass beds are widely distributed in Japan, from Hokkaido to Okinawa. However, reclamation, reduced transparency (lack of photosynthesis) and disruption of the ecological balance have led to the loss of suitable habitats and a decline in seagrass beds.



Seagrass beds, such as eelgrass beds, have high carbon storage capacity due to their wide distribution worldwide, their ability to store carbon in the ground and the high storage rate, and are attracting attention as a major source of blue carbon.