What is Blue Carbon?

Blue carbon refers to carbon that is captured and stored in marine and coastal ecosystems. These ecosystems can capture and store around 2% of UK emissions per year.

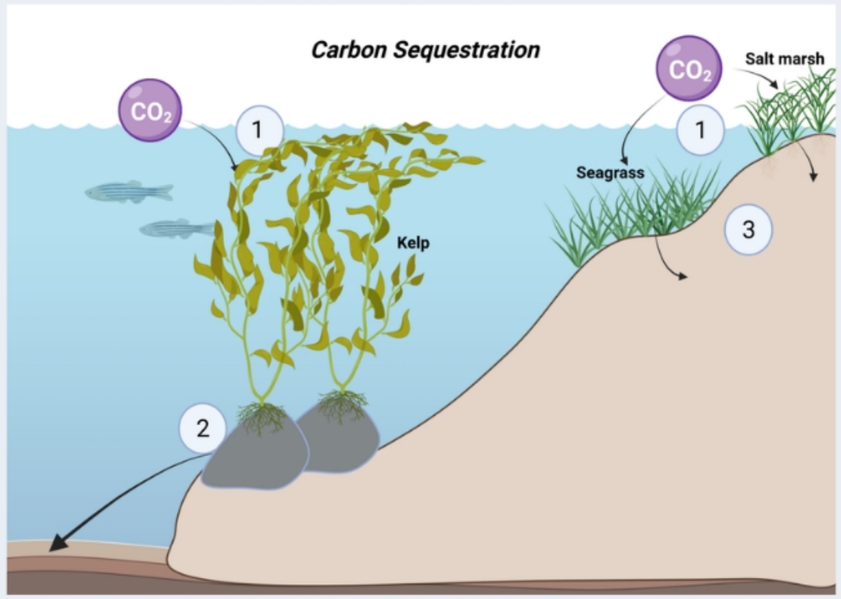

Diagram shows pathways for carbon capture and storage by kelp, seagrass, and salt marsh.

(1) **Carbon capture** occurs when dissolved inorganic carbon dioxide is absorbed and kept within the tissues of kelp, seagrasses, and salt marsh.
(2) **Carbon storage** occurs when kelp material is exported from the subtidal rocky reefs to deep-sea environments, where it may be buried in sediments.
(3) **Carbon storage** occurs when dead seagrass and salt marsh plants get trapped in the oxygen-free sediment stabilized by roots and rhizomes.
For both (2) and (3), carbon can remain captured indefinitely if undisturbed.
Figure: created using biorender.com. Credit: Hutto et al. 2021.

Seagrass

Seagrasses, marine flowering plants found in coastal regions, cover over 21 square kilometres of Scotland's coastline and store 0.17 megatons of carbon annually. These ecosystems play a crucial role in carbon sequestration, with most of the stored carbon being deposited in sediments over the long term.

Kelp

Kelp forests span over 3,740 square kilometres in Scottish waters. The carbon stored within living kelp contributes to marine carbon capture, with Scottish kelp estimated to produce around 1.4 megatonnes of carbon annually and store around 0.6 megatons within its biomass.

Biogenic Reefs

Biogenic reefs in Scotland consist of calcium carbonate structures formed by various organisms for example mussel beds and brittle star beds, found in both shallow and deeper waters. Despite their significance in carbon capture, surpassing even terrestrial habitats, the complete extent of biogenic reefs in Scottish waters remains uncertain.

Maerl

Maerl beds, consisting of living and dead red coralline algae with calcium carbonate skeletons, span over 31 square kilometres. Scottish maerl beds sequester approximately 541 tonnes of carbon annually, contributing to an estimated 2 megatons of carbon already stored within these habitats.

Statistics taken from Scottish Blue Carbon Forum.

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