

Assessing the influence of saltmarsh restoration on sediment dynamics

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Coastal wetland ecosystems can act as large-capacity, long-lived carbon sinks and could play a role in providing climate change mitigation services. This societal benefit can be taken as an additional benefit to promote restoration efforts of these globally threatened ecosystems.

The Eden Estuary, Scotland has been the focus of saltmarsh conservation efforts using the transplantation of *Bolboschoenus maritimus* from donor stands to un-vegetated mudflat. Efforts were focussed on the expansion of the existing marsh and to provide protection to exposed high marsh cliffs. The additional carbon storage within the estuary resulting from these efforts is being assessed to better understand the holistic value of such conservation initiatives

Sediment deposition and settlement measures were taken seasonally across spring to neap tidal ranges. Study areas were classified as 'natural' (*B.maritimus* marsh or high marsh dominated by *Puccinellia maritima*), 'old planted' (being >10 years old), 'young planted' (being <5 years old) and bare mudflat. Samples provided measures of total sediment, organic content and carbon content being deposited or settling. Image analysis was also employed to quantify the vegetative cover and density at each sampling point in each season. These data were used to assess the different sediment dynamics within each study area and how vegetation structures might influence sediment behaviour.

Initial data suggests differences in sediment dynamics between the areas, with 'natural' marsh and 'old planted' areas experiencing the least absolute total sediment deposition. Further, there is a difference in organic and carbon content between these samples. Factors influencing these differences could be attributed to type and density of vegetation present and elevation of each area, used as a proxy for immersion period. Early results indicate the importance of vegetation stand age in terms of the mediation of sediment dynamics and carbon storage.