

O20.2**Marineff project: scaling-up eco-engineering trials on artificial coastal structures**

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Abstract

Intertidal habitat is declining due to multiple stressors, including sea level rise and the proliferation of artificial coastal structures (ACSs). Socio-economic and recreational pressures on developed coastlines add to the urgency that necessitates designing coastal infrastructure that better facilitates habitat. Most ACSs involve hard engineering that has low complexity and smooth textures which do not provide adequate habitat analogous to natural rocky shores. Recent research has demonstrated that enhancing ACSs with habitat features, such as cracks, crevices and areas of water retention, increases biodiversity. These studies are predominantly small-scale and short-term and so larger-scale, longer-term studies are required to demonstrate the efficacy of these features for coastal practitioners. This is essential to permit acceptance and application of eco-engineering within real-world engineering.

The Marineff project, co-funded by the European Regional Development Fund, has installed one of the largest arrays of artificial rockpools to date. Spanning two sites on the south coast of England and involving 90 concrete artificial rockpools, we investigate how to maximise biodiversity benefits by arranging the rockpools as single units or as horizontal groups of 3 or 5 rockpools. Over 2 years, we will be monitoring changes in species richness and abundance in the following habitats: the interior and exterior of the pools, the surrounding seawall above and below the pools, in unenhanced control sections of the seawall, and a separate, unenhanced control 80m section of seawall.

Here we present initial results following 1 year of monitoring. Benefits are apparent at the scale of tidal level, seawall section and seawall extent, however the magnitude of enhancement is dependent on site. Compared to control sections, the artificial rockpool sections have overall greater species richness. The rockpool interiors host species not found on the seawall and rockpool specialists such as Montagu's blenny *Coryphoblennius galerita*.

**Keywords**

eco-engineering, ecological enhancement, coastal engineering, marine ecology