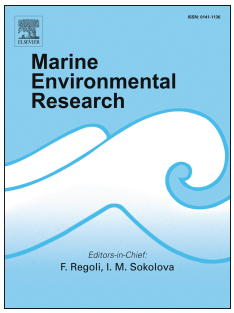
Accepted Manuscript



Biodiversity in intertidal rock pools: informing engineering criteria for artificial habitat enhancement in the built environment

Louise B. Firth, Meredith Schofield, Freya J. White, Martin W. Skov, Stephen J. Hawkins

PII: S0141-1136(14)00071-3

DOI: 10.1016/j.marenvres.2014.03.016

Reference: MERE 3876

To appear in: *Marine Environmental Research*

Received Date: 30 November 2013

Revised Date: 17 March 2014

Accepted Date: 25 March 2014

Please cite this article as: Firth, L.B., Schofield, M., White, F.J., Skov, M.W., Hawkins, S.J., Biodiversity in intertidal rock pools: informing engineering criteria for artificial habitat enhancement in the built environment, *Marine Environmental Research* (2014), doi: 10.1016/j.marenvres.2014.03.016.

Biodiversity in intertidal rock pools: informing engineering criteria for artificial habitat enhancement in the built environment

Louise B. Firth[1,2], Meredith Schofield[1], Freya J. White[1], Martin W. Skov[1], Stephen J. Hawkins[1,3]

[1] School of Ocean Sciences, Bangor University, Menai Bridge, Anglesey, LL59 5AB, United Kingdom

[2] Current address: Ryan Institute, National University of Ireland Galway Ireland, University Road, Galway, Ireland

[3] Ocean and Earth Science, National Oceanography Centre Southampton, Waterfront Campus, University of Southampton, European Way, Southampton, Hampshire SO14 3ZH, United Kingdom

Corresponding author: Louise B. Firth

Email: louise.firth@nuigalway.ie

Tel: +353 (0)91 493744

Address: Ryan Institute, National University of Ireland Galway Ireland, University Road, Galway, Ireland

Abstract

Coastal defence structures are proliferating to counter rising and stormier seas. With increasing concern about the ecological value of built environments, efforts are being made to create novel habitat to increase biodiversity. Rock pools are infrequent on artificial structures. We compared biodiversity patterns between rock pools and emergent rock and assessed the role of pool depth and substratum incline in determining patterns of biodiversity. Rock pools were more taxon rich than emergent substrata. Patterns varied with depth and incline with algal groups being more positively associated with shallow than deeper habitats. Substratum incline had little influence on colonising epibiota, with the exception of canopy algae in deeper habitats where vertical surfaces supported greater taxon richness than horizontal surfaces. The creation of artificial rock pools in built environments will have a positive effect on biodiversity. Building pools of varying depths and inclines and shore heights will provide a range of habitats, increase environmental heterogeneity, therefore creating more possible ecological niches, promoting local biodiversity.

Keywords