

Adding the “where” to the “who and what”. Considering the seascape can help the study of biodiversity and ecosystem functioning.

Ferrario Filippo¹, Thew Suskiewicz¹, Yuri Rzhanov², Ladd E Johnson¹, Philippe Archambault¹

¹ Département de Biologie / Québec-Océan, Université Laval, Québec, QC, CANADA

² Center for Coastal and Ocean Mapping/Joint Hydrographic Center, University of New Hampshire, Durham, NH, USA

Corresponding author:

Filippo Ferrario

email address: filippo.ferrario@gmail.com

ABSTRACT

Whether we want to conserve, restore or enhance biodiversity, or use it to assess the environmental status of our coasts, the indissoluble link between biodiversity and ecosystem functioning is influenced by the spatial context of an ecosystem (the seascape). Using field-based research conducted in subarctic regions, we will show how the seascape can modulate species interactions which impair the habitat-forming functions of kelp. Specifically, bottom heterogeneity modulates top-down grazer control impacting the functioning of artificial structures as habitats for canopy-forming seaweeds in habitat compensation efforts. Unfortunately, coastal habitat maps from which seascape information could be obtained are often non-existent or are coarse in scale. We thus present how optical imagery-derived photomosaics can be used to map biological and geomorphological features over continuous and wide areas. Moreover, photomosaics can reveal patterns of local distribution of benthic species that can be useful when assessing biodiversity to evaluate the environmental status in coastal areas. Seascape context is thus a determining element which will improve our ability to maintain ecosystem functioning and services and inform coastal management.