

Phytoplankton: supporting a good pelagic habitat.

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Phytoplankton provide important climate cycle and ecosystem functions, and must be included in assessments of pelagic habitat status. Phytoplankton are currently considered within environmental standards, but often negatively - as indicators of unwanted environmental change, such as eutrophication or harmful algal blooms, with limited effort to consider or support areas of naturally higher productivity. In order for this to change, primary production must be fully recognized as vital ecosystem process, and phytoplankton as supporting other ecosystem services (ES) we value. The spatially heterogeneous nature of phytoplankton parameter distributions must also be recognized, as spatial and temporal patchiness in the production of phytoplankton can be related to patchiness in the provision of these ES. We must act to maintain naturally increased levels of primary production and phytoplankton concentrations and species. This will require consideration of the physical environment creating the conditions (physical “habitat”) for the phytoplankton, as it is this which determines, for example, patches of high productivity and therefore importance to supported ES. Additionally, the effects of climate change induced shifts to baselines must be kept in mind. Spatial and temporal phytoplankton variability off the east coast of Scotland, with its impacts on monitoring for MSFD and in marine spatial planning and sectoral licensing will be explored as examples. For example, mapping patches and considering effects of wind farms provides evidence of the impacts human developments can have on patches and comparing remotely sensed to long term monitoring site data offers implications to methods to monitoring pelagic habitat status.

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