Marine ecological modelling

Marine monitoring and environmental management

Understanding trade-offs in marine ecosystem services – Oil and gas decommissioning case study

Country: United Kingdom

Main driver: OSPAR 98/3

Period of work: 2017-2018

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Summary

The project aims to determine what ecosystem services are provided by sandy sublittoral habitats and how the supply of such services can vary as a result of anthropogenic activity, specifically oil and gas infrastructure decommissioning. The outcomes will relate to the stocks and flows of natural capital and be used to promote sustainable management practices and improve socio-economic wellbeing.

Work involved

- Development of an Ecosystem Service Provision (ESP) model using existing Conceptual Ecological Models from a sandy sublittoral habitat to simulate natural ecosystem function without anthropogenic stressors;
- Construction of stressor scenarios to simulate the ecological impact of oil and gas infrastructure decommissioning activities on sandy habitats;
- Application of the stressor scenarios to the ESP model;
- Assessment of the relative 'trade-off' in the provision of ecosystem services at different levels of anthropogenic pressure.

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Key outcomes

- Dynamic ESP model for sandy habitats;
- Recommendations for oil and gas decommissioning legislators and practitioners to inform best practice during decommissioning.

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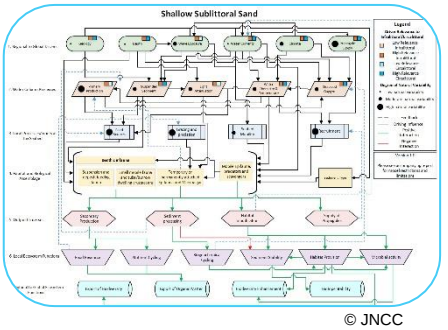
Future work

Additional ESP models will be developed by JNCC to simulate ecosystem function in other broad-scale marine habitats, including sublittoral mud, rock, coarse sediment and mixed sediments. Potential impacts caused by anthropogenic activities to these habitats will be simulated by a broad range of new stressor scenarios, each representing highly topical marine issues. As a result, JNCC will improve our understanding of natural capital fluxes in the UK and how they will be affected by anthropogenic stressors and activities.



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Identified research priorities

Develop sustainable management practices and enhance socio-economic wellbeing through further investigation in the provision of ecosystem services from marine habitats and what the trade-offs are with changes in anthropogenic activity in those habitats.

Further information

http://jncc.defra.gov.uk/pdf/JNCC15%2027_Implementing_JNCCs_Strategy.pdf

Key words: Ecosystem services, decommissioning, marine ecological modelling