

# Sensitivity of biogenic reef forming organisms and commercially important benthic invertebrates in an era of marine renewable development

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Kim Last  
Scottish Association for  
Marine Science

Wave & Tidal Stream Energy Devices - [www.snh.gov.uk](http://www.snh.gov.uk)

- 1) Downstream effects linked to removal of energy, such as sedimentation and smothering of habitat
- 2) Acoustic impacts on 'sensitive' species such as marine mammals
- 3) Collision risk between marine mammals (seals, cetaceans), large fish (basking shark) and diving seabirds with operational turbines



Image: DTI  
UK Tidal Flow

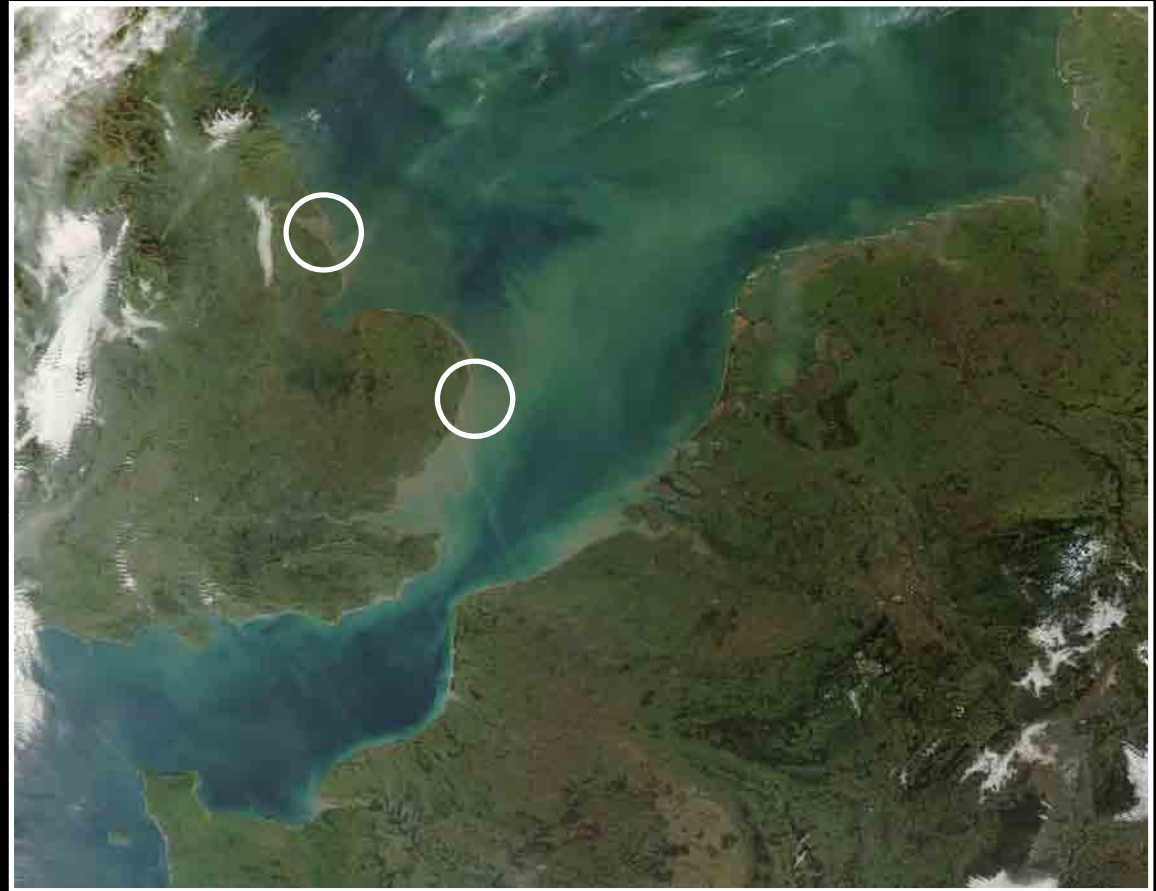


Image: Jeff Schmaltz, MODIS Rapid Response Team, NASA/GSFC  
Suspended Particulate Matter (SPM) levels shades of brown / light green

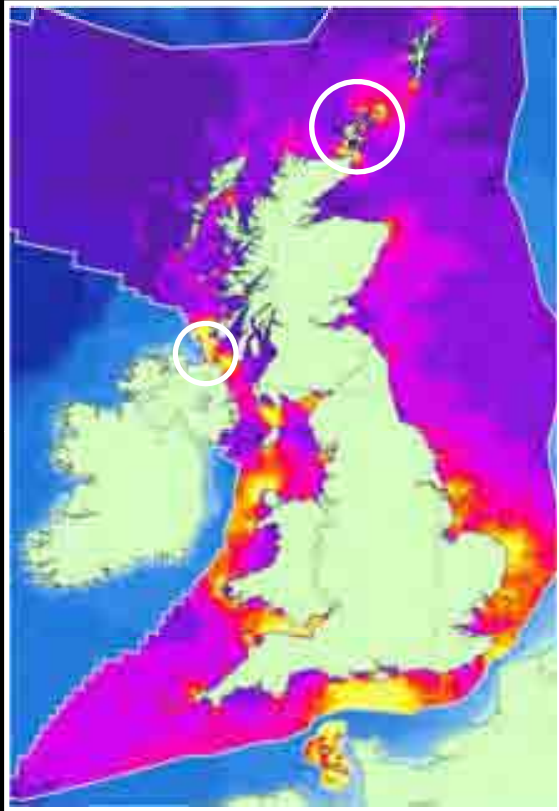


Image: DTI  
UK Tidal Flow

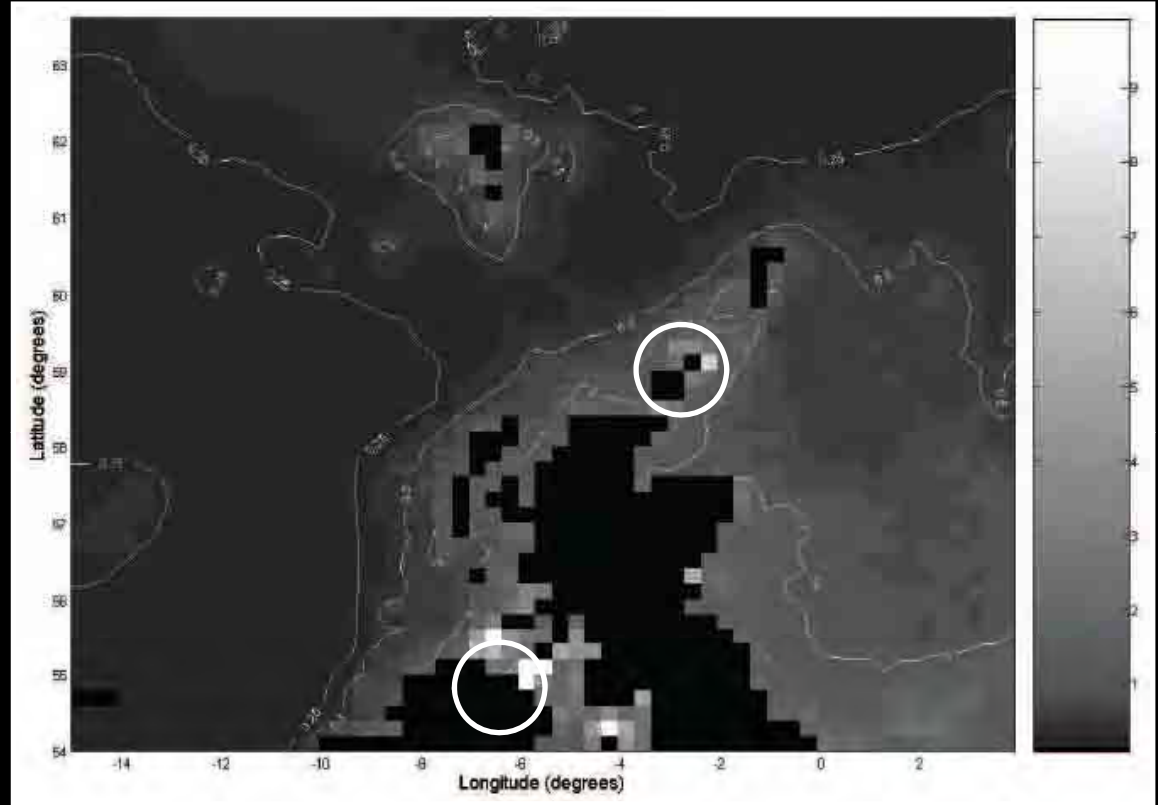


Image: European Regional Seas Ecosystem Model ( ERSEM)  
Suspended Particulate Matter (SPM) levels (mg/l)

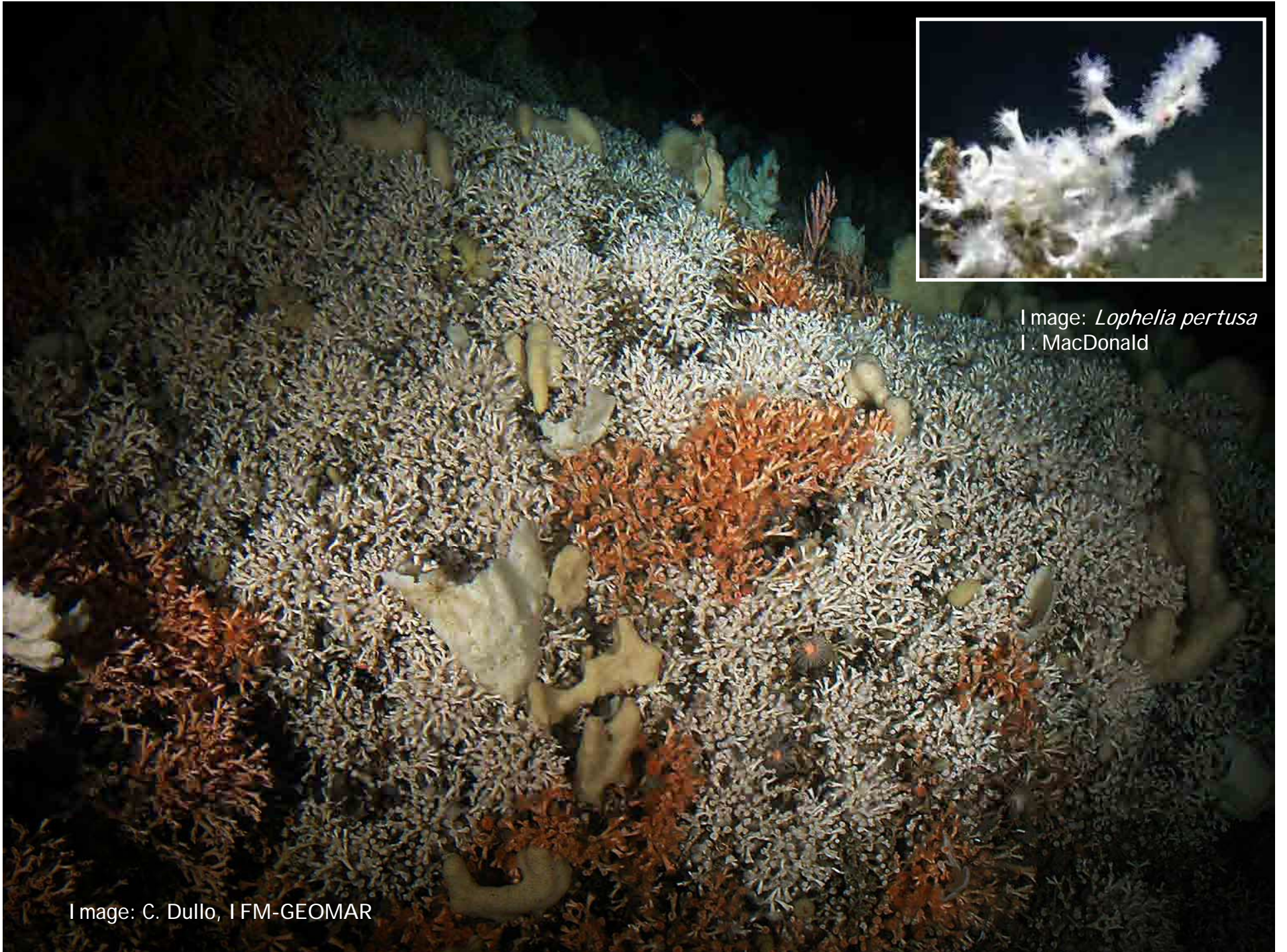


Image: *Lophelia pertusa*  
I. MacDonald

Image: C. Dullo, IFM-GEOMAR

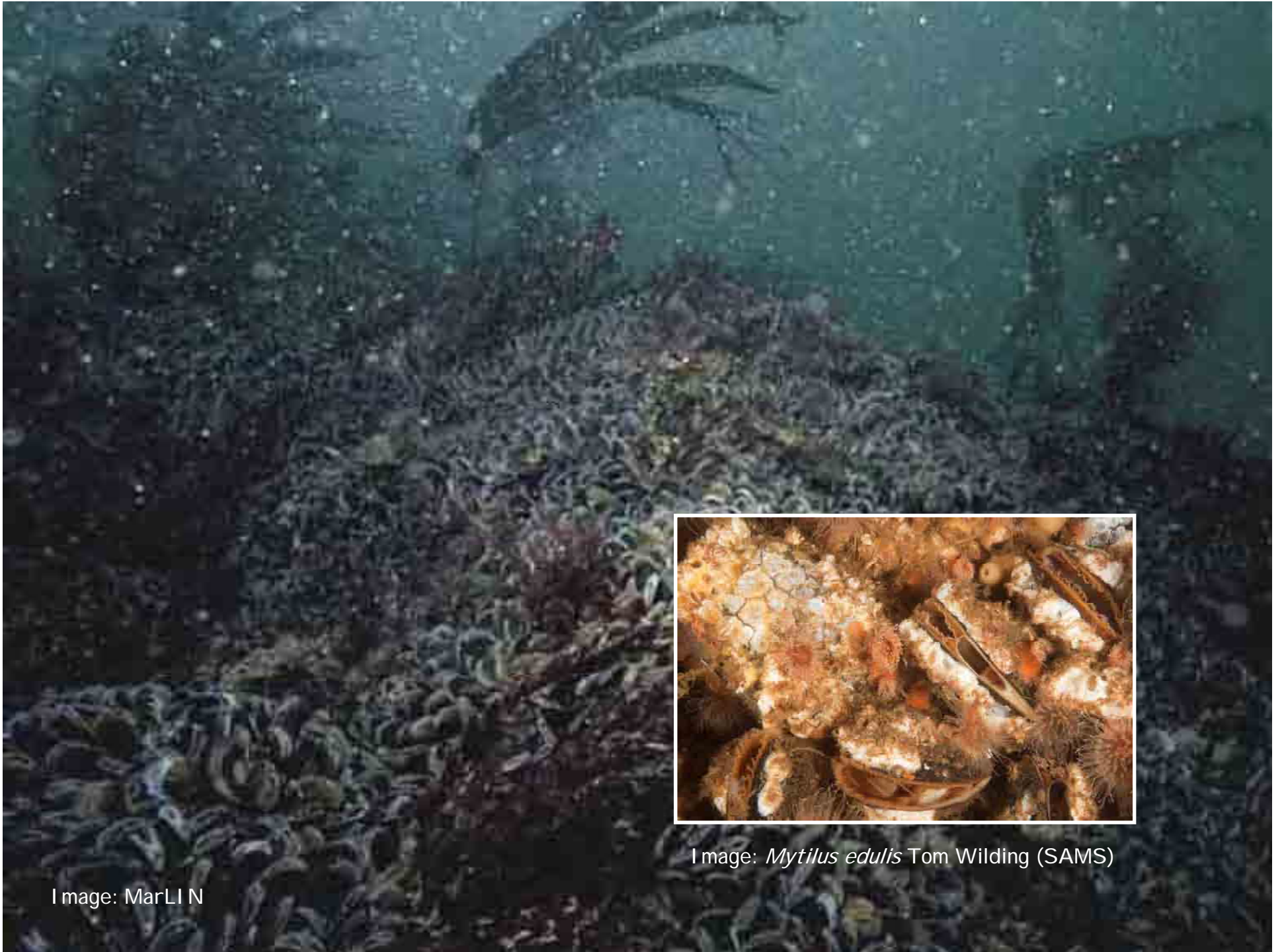


Image: MarLIN



Image: *Mytilus edulis* Tom Wilding (SAMS)



Image: Fugro Denmark



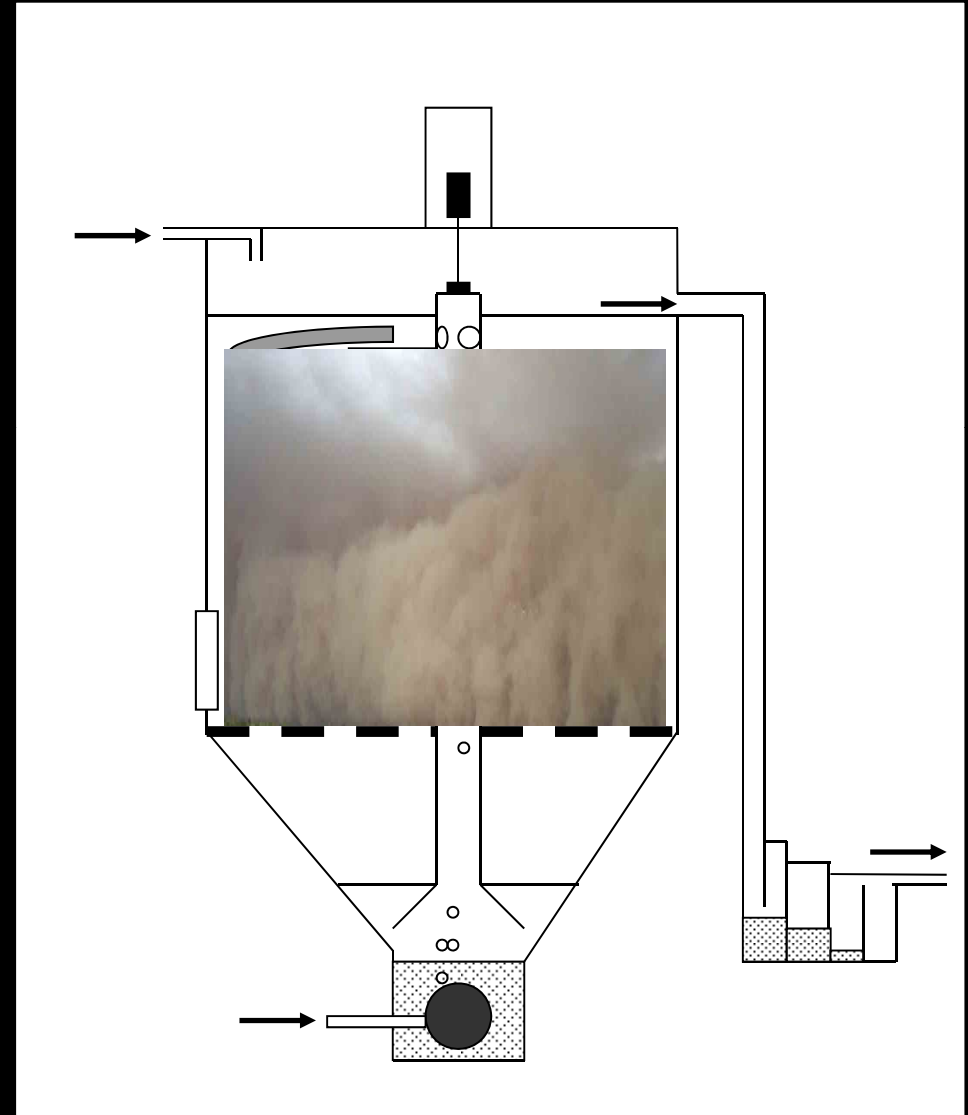
Image: *Sabellaria spinulosa*  
Kim Last

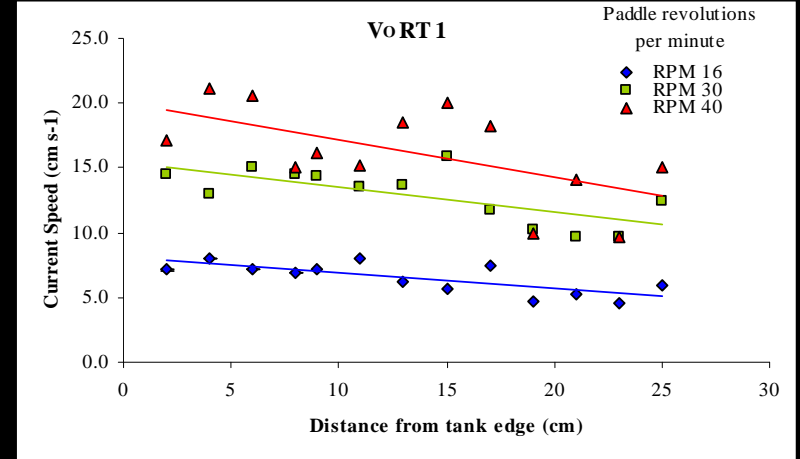


Image: British Marine Aggregate Producers

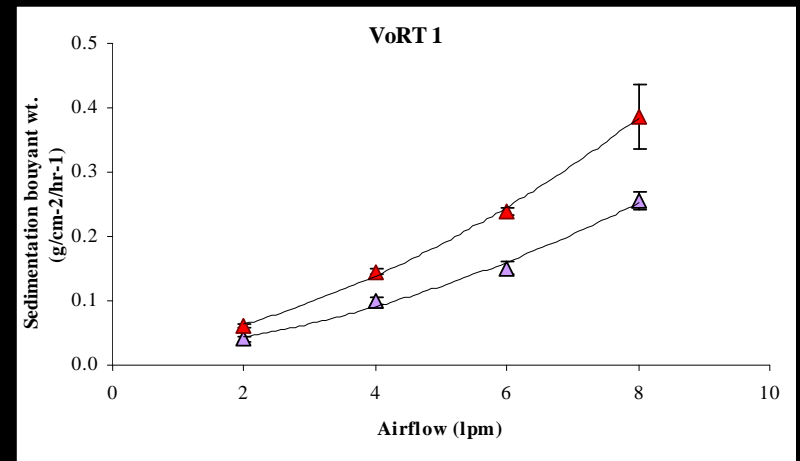


# *p*addle Vortex Resuspension Tanks (*p*VoRTs)



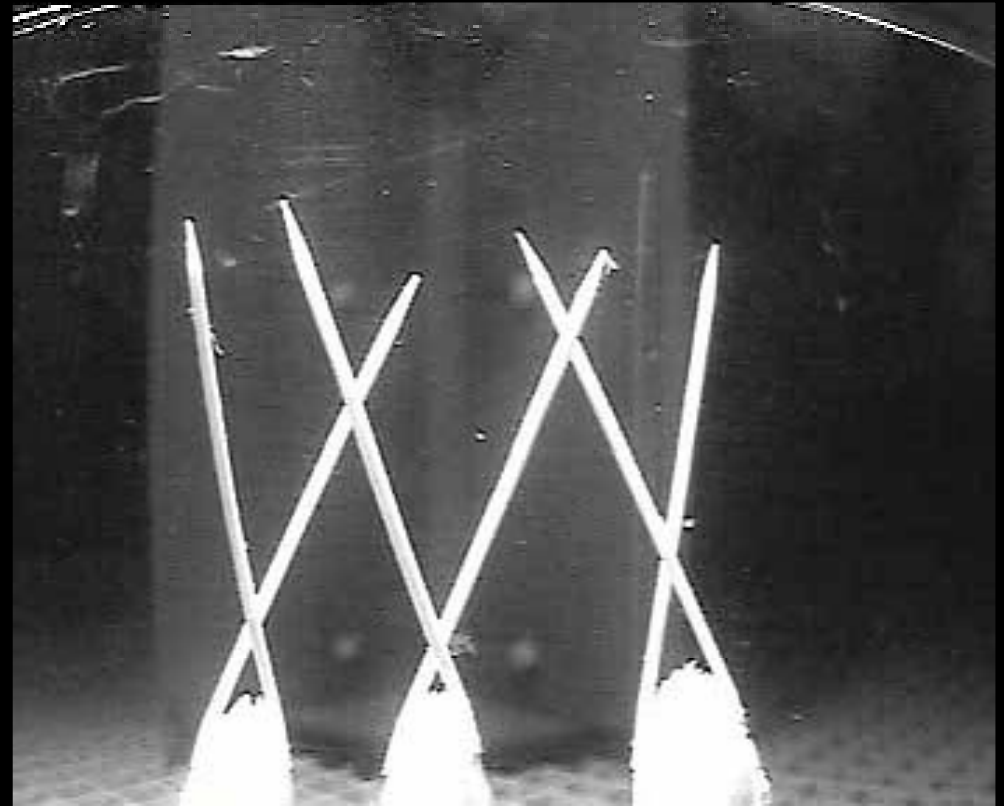
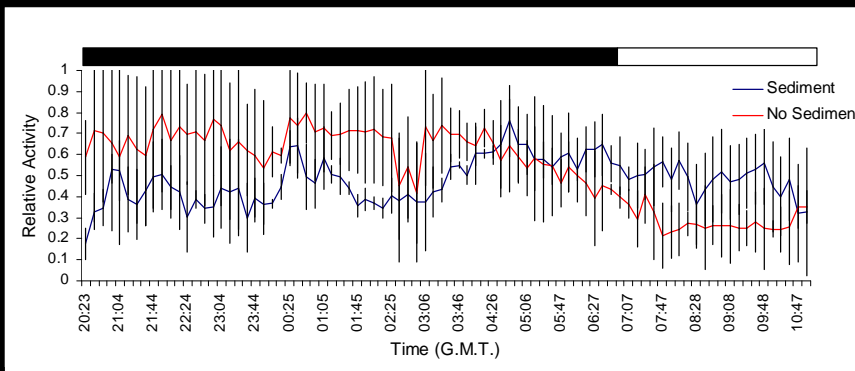
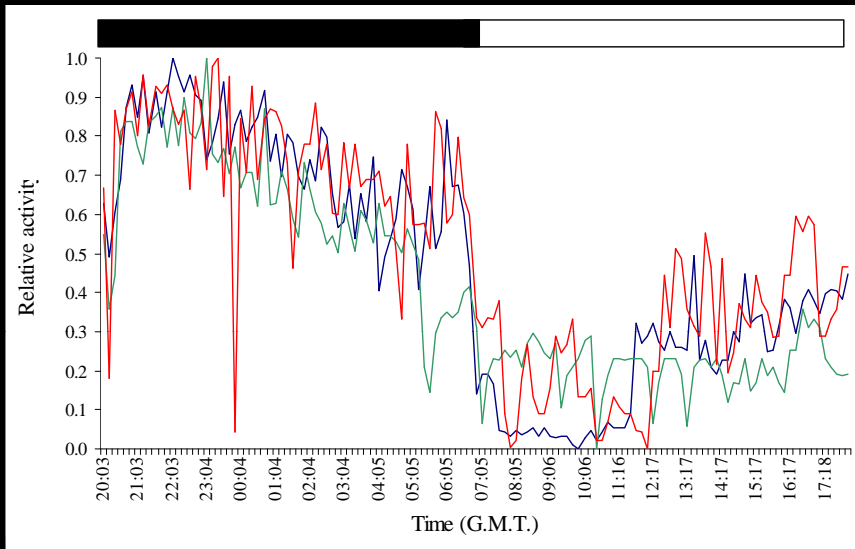


Current speeds



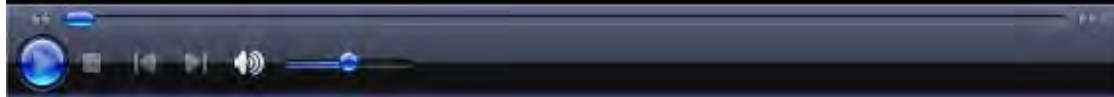
Sedimentation Rates

# Behavioural Responses of *M. edulis* to SPM

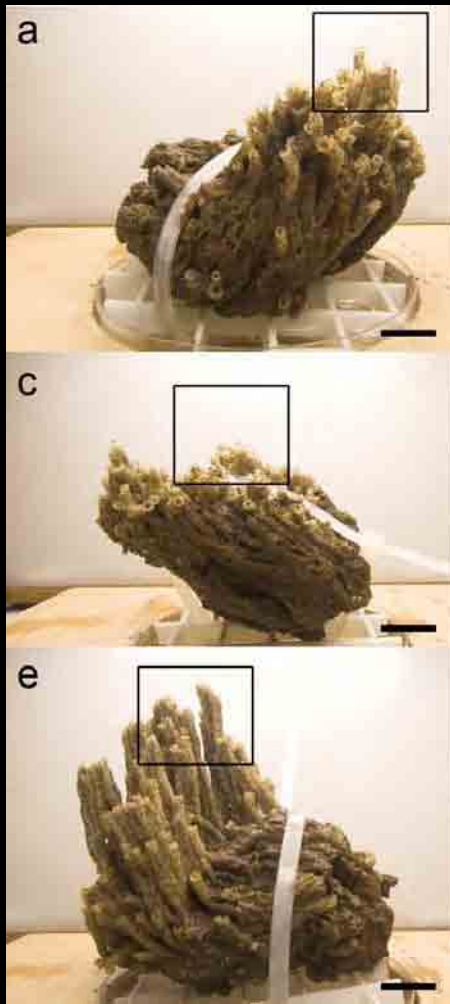


Clapping mussels!

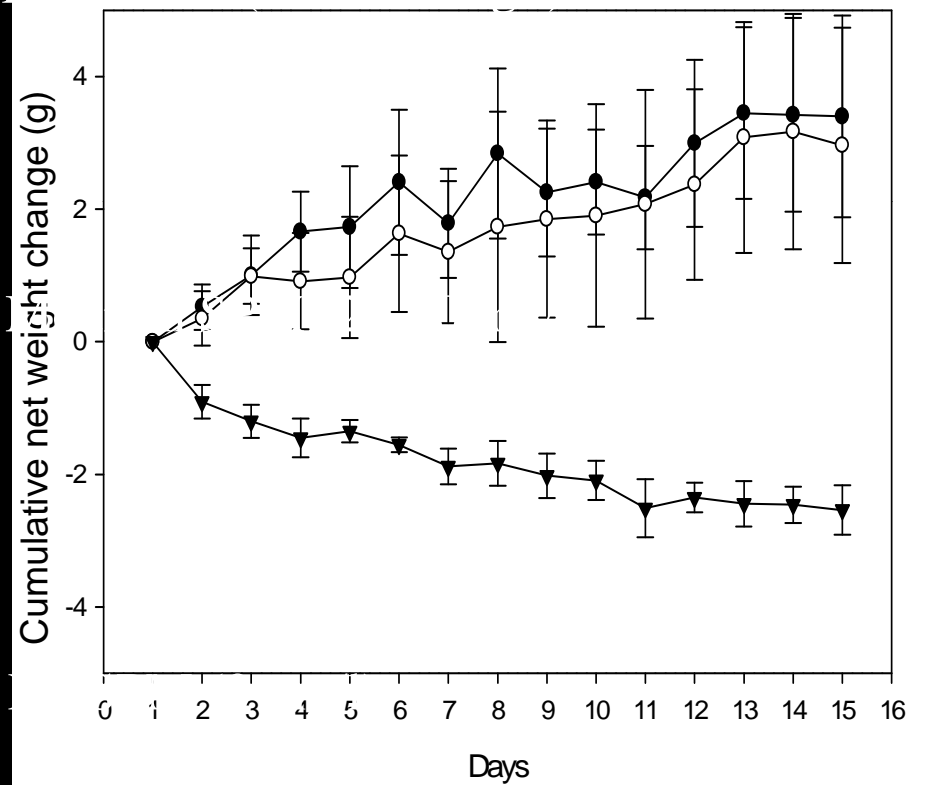
# Behavioural Responses of *M. edulis* to burial

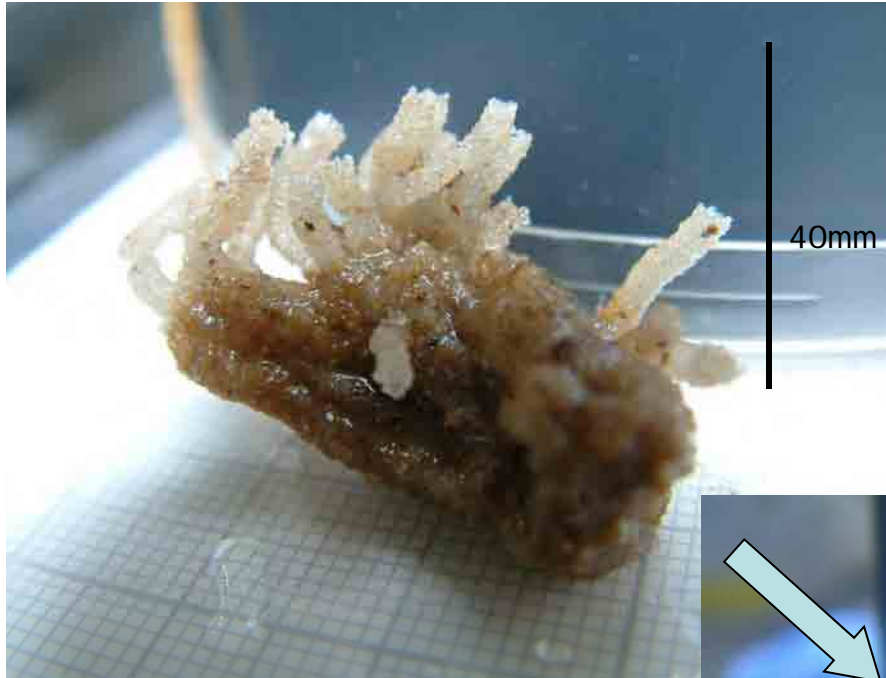


# Behavioural Responses of *S. spinulosa* to SPM

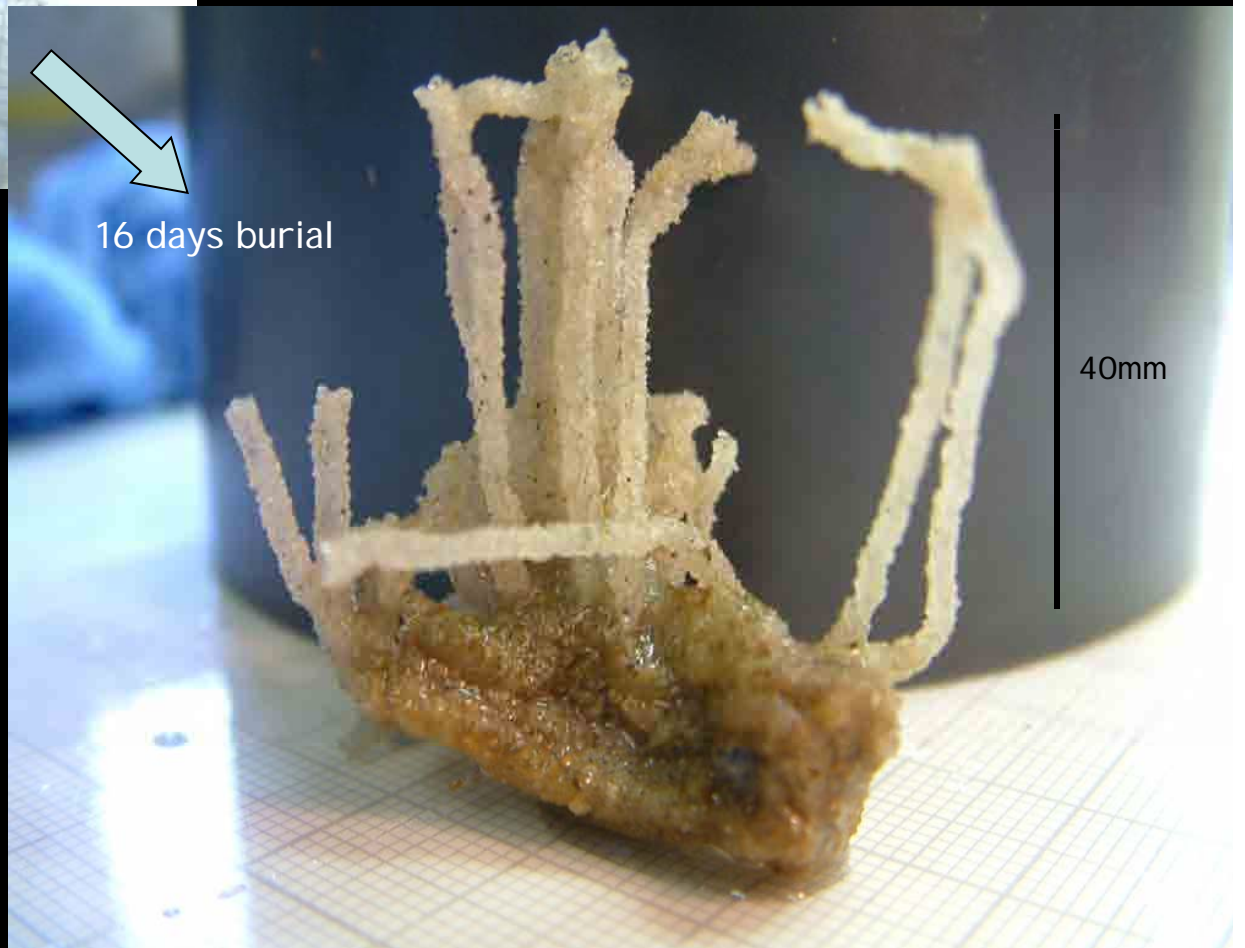


Before





Behavioural Responses of  
*S. spinulosa* to burial  
Chilean Miner Style



# Marine Renewable Energy and the Environment (MaREE)



Zoë Hutchison

Focusing on the responses of a range of commercial species and biogenic reef builders the following questions will be addressed:

- What are the behavioural and physiological effects to altered SPM?
- What are the behavioural and physiological effects to complete burial?
- What are the inferred implications of burial / altered SPM of the MRD industry to benthic invertebrates?
- Which species / habitats are most at risk?



# Acknowledgments

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