

# Researching the ecological impacts of North Wales windfarm sites as analogies to Welsh tidal and wave energy developments

**AIMS:** To understand how the introduction of hard-substrate in the form of wind turbine structures affects benthic habits along the North Wales coastline.

## RATIONALE:

The expanding marine renewable energy industry (tidal stream, tidal range and wave energy) around Wales is hampered by uncertainties surrounding the potential impacts of such developments on surrounding marine ecological systems. This is primarily due to the novelty of these developments, which makes accurately predicting future impacts difficult. However, offshore wind farm (OWF) structures offer an invaluable existing analog for planned developments for two reasons: 1) The wind farm turbine structures are very similar in design to a range of tidal current devices, and are relevant to the impacts of tethering and mooring systems across tidal and wave power; 2) the wind farms off the north Wales coastline have been in place for varying periods of time, making them a 'natural experiment' in disturbance impacts and subsequent ecological succession and recovery.

## SOME IMAGES HERE:



## METHODS:

- Transects within turbines conducted in parallel and perpendicular to the dominant tidal axis to disentangle tidally driven effects (e.g. scour, sediment deposition) from those that may be less affected by water movement, such as reef associated predation.
- Beam trawl transects and lobster pot deployments at increasing distance from wind turbines.
- Multi-beam assessment of hard-substrate material at base of wind-turbines and degree of scour.

## OUTCOME:

Gaining a detailed understanding of the effects of OWF developments, the circumstances under which they occur and the manner in which they interact is crucial if the marine renewables industry in Wales is to be expanded in a responsible and effective manner. Doing so will not only allow for more accurate prediction and mitigation of negative impacts, but will improve our ability to enhance and capitalise on the opportunities and potential ecological benefits they present. This project would benefit the industry by reducing uncertainty for renewable projects, it benefits Xodus Group by demonstrating to clients our commitment to progressing the renewables sector and enabling Xodus to deliver cutting edge knowledge and advice.

