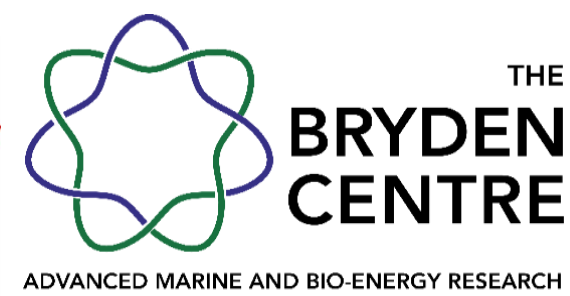


Proving a robust approach to assess bio-physical interactions with floating tidal turbines



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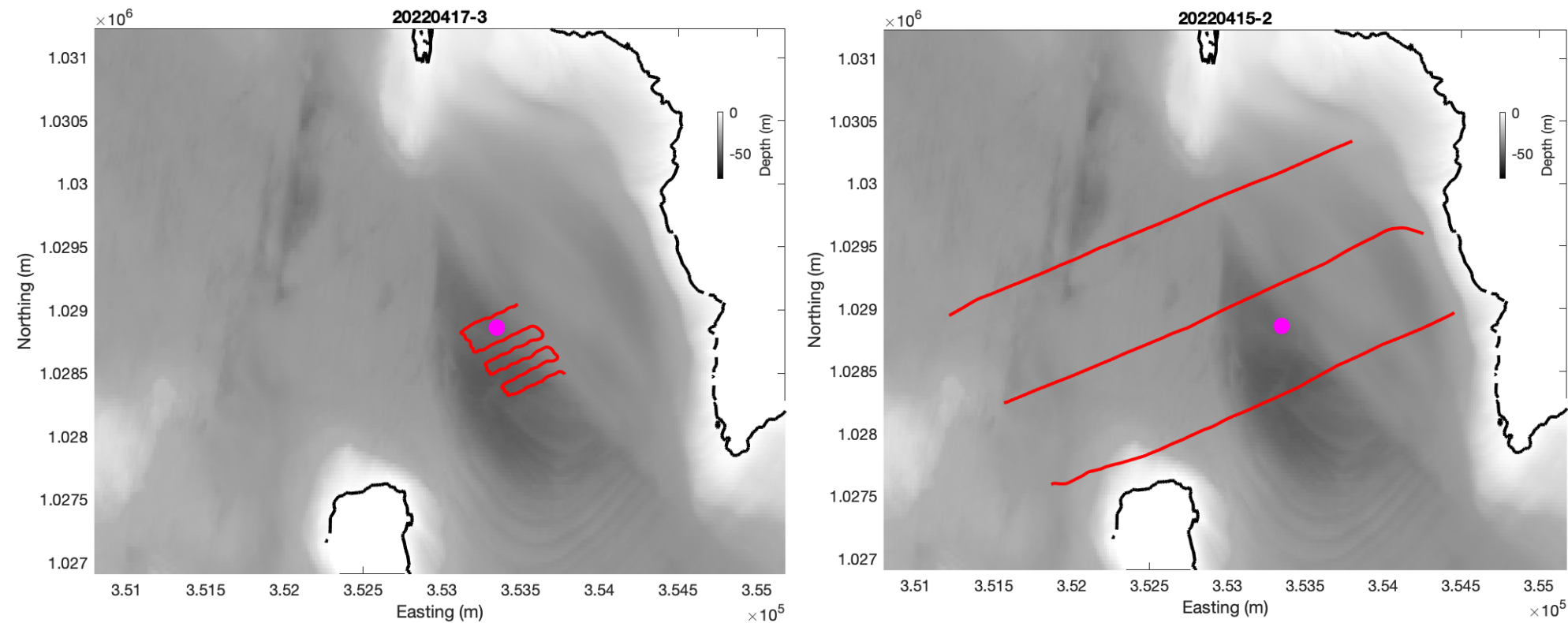
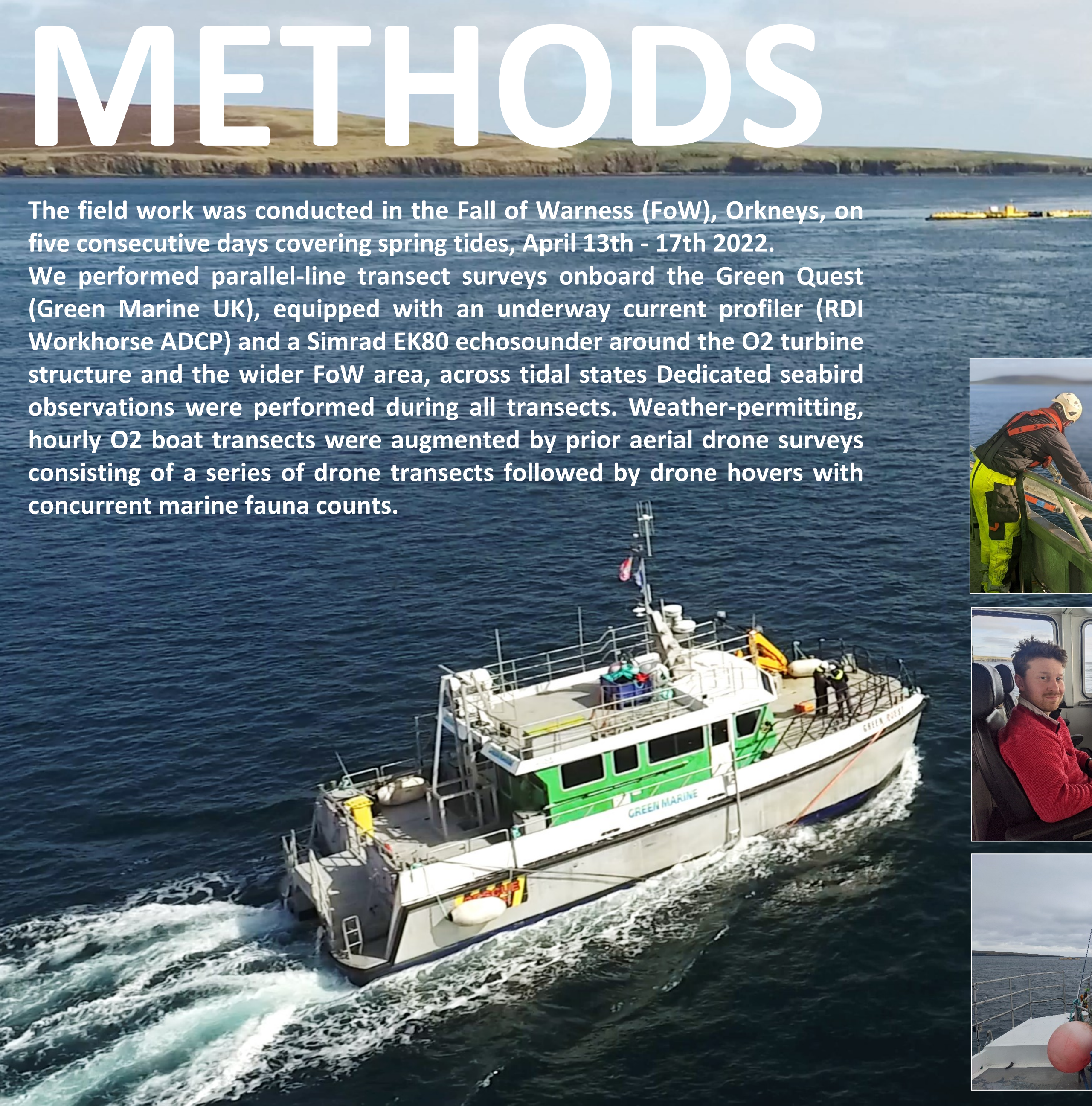
This ECR research fund supported a feasibility study around Orbital's O2 floating tidal energy structure located in the Fall of Warness, Orkneys, Scotland, to inform on industry-relevant flow measures and environmental interactions, thereby proving a low-cost, robust and reproducible monitoring approach.

SUMMARY

The overall goal of the project was to generate *in-situ*, industry-relevant data to be used in flow field characterisation (inflow and wake effects), turbine array spacing, as well as for environmental impact assessments. This was achieved using a combination of vessel-mounted transects equipped with water column sensors, concurrent seabird observations and aerial drone surveys.

METHODS

The field work was conducted in the Fall of Warness (FoW), Orkneys, on five consecutive days covering spring tides, April 13th - 17th 2022. We performed parallel-line transect surveys onboard the Green Quest (Green Marine UK), equipped with an underway current profiler (RDI Workhorse ADCP) and a Simrad EK80 echosounder around the O2 turbine structure and the wider FoW area, across tidal states. Dedicated seabird observations were performed during all transects. Weather-permitting, hourly O2 boat transects were augmented by prior aerial drone surveys consisting of a series of drone transects followed by drone hovers with concurrent marine fauna counts.



*Left: Transect line examples up- and downstream of the O2 (pink circle);
Right: area-wide transects across the Fall of Warness*

*ADCP-derived current magnitude
across the water column during
O2 transects*

