# Development of an acoustic system to investigate cetacean response around an operating power kite

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RATIONALE:

Little is known about the potential for collision risk of marine mammals with marine renewable energy devices and tidal kites in particular. In order to minimise impacts an understanding of animal response around active installations is required and as protected species, marine license conditions often require that wildlife interactions are monitored. The DG500 is the world's first commercial-scale power kite, which was commissioned in the Holyhead Deep in 2018 and 2019. This study developed a first of its kind, compact passive acoustic monitoring (PAM) array to track dolphin and porpoise movement around the kite.

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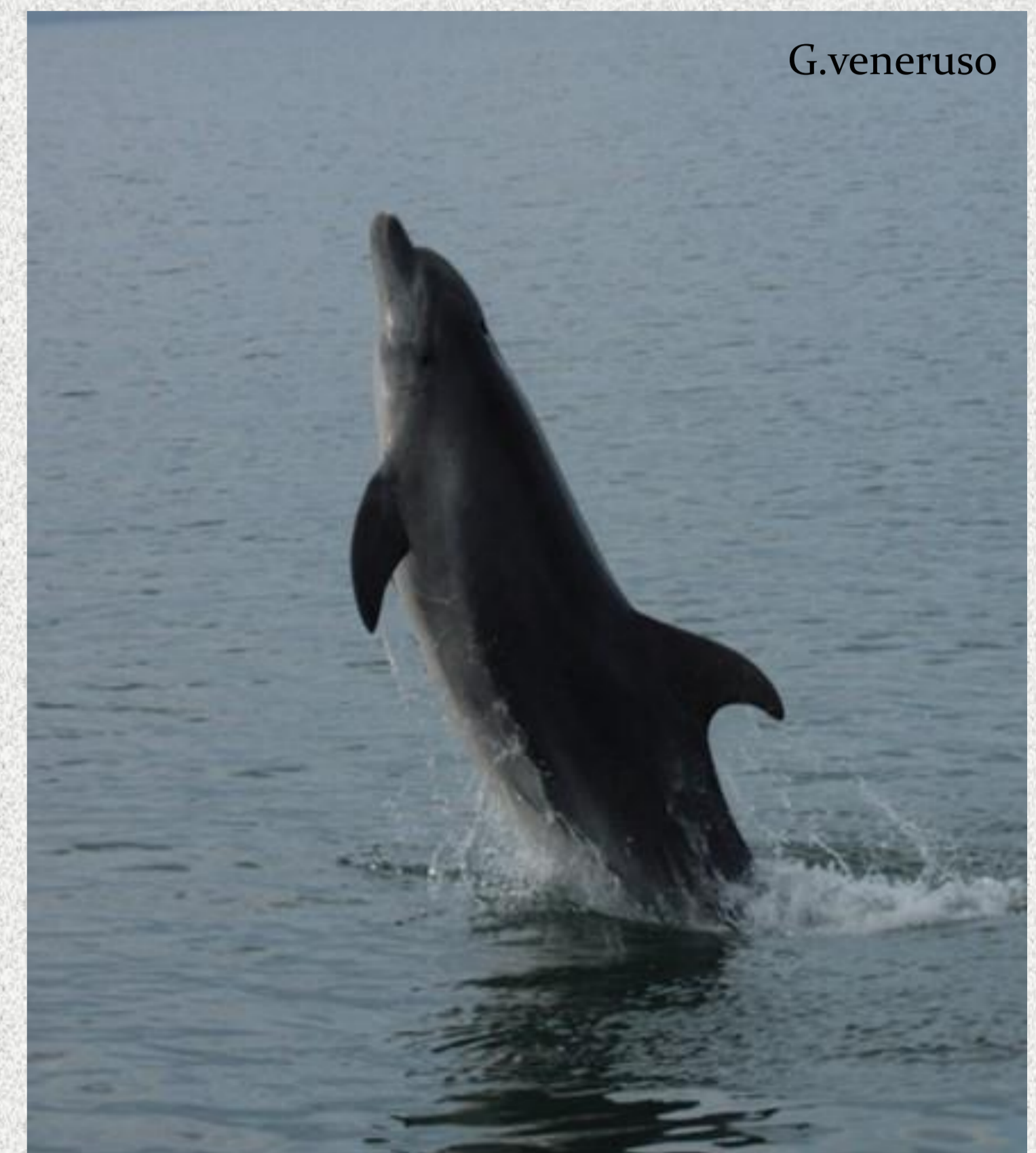
OBJECTIVE:

Develop a self-powered PAM system that will localise and track cetacean movement around the DG500.

METHODS

Echo-locating animals can be recorded using hydrophones (underwater microphones) and tracked in 3D when multiple hydrophones within a PAM array are used. The time of arrival difference of echolocation signals reaching each hydrophone can be calculated to localise an animal to a bearing and range and subsequently estimate a position. With multiple signals animal movement can be tracked around the DG500 using the changes in these positions.

Tidal kite
Hydrophones
Courtesy of Minesto

The PAM array was deployed in the Holyhead Deep alongside Minesto infrastructure in summer 2019 for a trial period.

OUTCOME:

This study is an important first step towards assessing cetacean response to tidal kites. A PAM system has been successfully developed, for use alongside future deployments of the DG500, to collect data on underwater movements and response of cetaceans.

Veneruso, G., Torrens-Spence, H., Green, A., Gillespie, D. (2020). Investigating cetacean response around an operating Deep Green Unit. SEACAMS2 SC2-RD-B11, Bangor University.

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