**IM Graham *et al.* – Supplementary Material for:**

**Directional hydrophone clusters reveal evasive responses of small cetaceans to disturbance during construction at offshore windfarms**

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**Table S5.** The number of seconds and encounters with porpoise detections on hydrophone clusters during the deployment of mitigation measures and baseline periods used to examine directionality of porpoise movements. The distribution of differences in bearings was tested using Rayleigh Tests, initially for uniformity, and then for uniformity against a unimodal alternative with a specified mean direction of 0°. Statistical analyses were performed at two temporal scales, using the difference in the circular median bearing to porpoise detections per second and per encounter (see Methods section for details) to verify that test results using detections per second were robust to the failure to account for the dependence structure of the data. To remove spatial and temporal autocorrelation in the data, data were summarised by encounter resulting in a single encounter per mitigation event for each hydrophone cluster for all encounters during ADD deployment and piling soft starts. Results of the Rayleigh Tests using the median bearing to detections per encounter were consistent with results using the median bearing to detections per second.

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| --- | --- | --- | --- | --- |
|  |  | **Baseline** | **ADD** | **Piling** |
| **Sample Size** | Seconds | 5925 | 75 | 112 |
| Encounters | 306 | 8 | 9 |
|  |
| **Rayleigh Tests** |  | **Baseline** | **ADD** | **Piling** |
| General (no Specified Mean Direction) | Second | **R = 0.074, p < 0.001** | **R = 0.573, p < 0.001** | **R = 0.626, p < 0.001** |
| Encounter | R = 0.091, p = 0.08 | R = 0.546, p = 0.09 | **R = 0.578, p = 0.045** |
| Alternative with a Specified Mean Direction | Second | R = -0.052, p = 1.00 | **R = 0.564, p < 0.001** | **R = 0.592, p < 0.001** |
| Encounter | R = -0.070, p = 0.96 | **R = 0.452, p = 0.035** | **R = 0.559, p = 0.008** |

**Figure S2**. Harbour porpoise movements relative to the sound source during baseline periods, ADD mitigation and piling soft start: bearings around 0° are indicative of evasive responses. Plots are circular histograms of the difference between the circular median bearing to porpoise detections each encounter (top panels) or each second (bottom panels) and the bearing to the construction site.

