

Supplementary Figure 1. Detection probability of acoustic tag transmissions as a function of tag depth and tag-to-receiver distance. Field tests were conducted in Ladysmith Harbour, B.C., in August 2008. Three test tags were used: VEMCO V9-2L (69 kHz, 145 dB), V7-4L (69 kHz, 136 dB), and V6-1H (180 kHz, 140 dB). VEMCO VR2W 69 kHz acoustic receivers were deployed from 0 to 540 m distance from the tags with 30 m spacing between units (19 receivers total), and 180 kHz receivers were deployed from 0 to 285 m distance from the tags with 15 m spacing (20 receivers total). All receivers were

deployed 1 m above the seabed at 54 m depth; the site was chosen for having a featureless flat bottom of soft sediment and a uniform depth of ca. 55m. Test tags were held for fixed periods of 15 mins at successive 5 m depth increments between 0 and 55 m depth. Tags were programmed to transmit at fixed intervals (i.e., no randomization of the transmission interval) so that the number of transmissions during the deployment period was known and the two 69 kHz tags were activated so that transmissions did not overlap. The probability of detection of each transmission was then calculated as the proportion of transmissions detected by each receiver during each 15-minute transmission period (depth interval). A Loess bivariate fit (smoothing parameter =0.5) was used to interpolate detection probability as a function of tag-to-receiver horizontal distance and tag depth. Detection probability contours are overlaid onto shaded areas.

