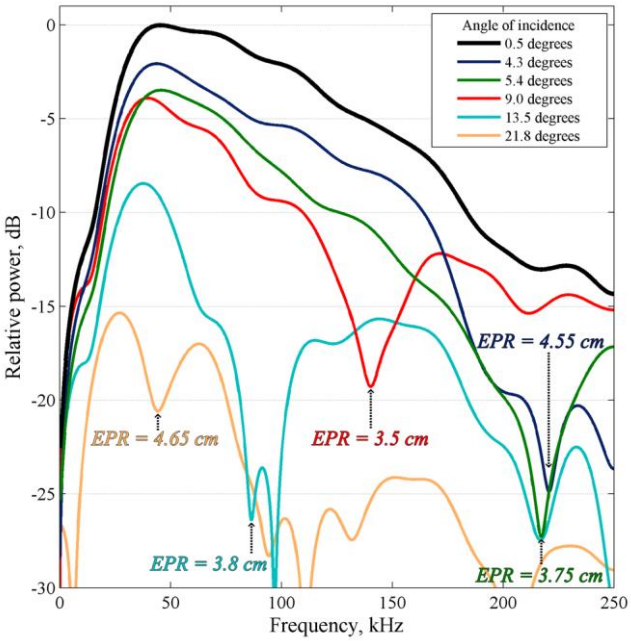

Fig S1. Implementation of spectral notch estimation of equivalent piston radius (EPR). Solid lines (colour-coded according to estimated angle of incidence) indicate the interpolated (100x) power spectrum derived at each receiver and offset from the on-axis power spectrum by the difference in estimated peak-to-peak source level. Arrows mark the first spectral notch for each channel (notches were estimated from non-interpolated power spectra), with estimated equivalent piston radius calculated from eq. 1. The total mean equivalent piston radius for this click was 4.05 cm.

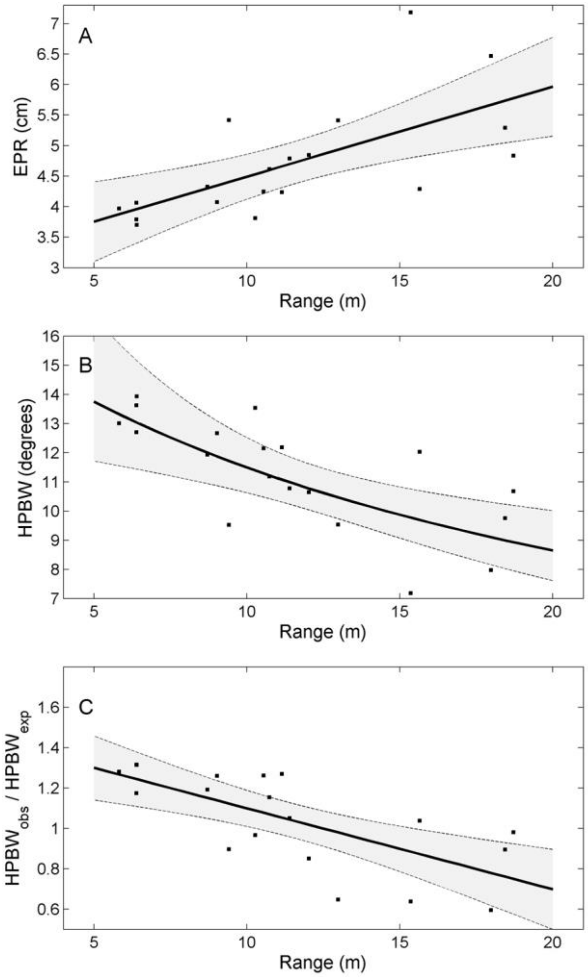

Fig. S2. Dynamic changes in biosonar field of view for Atlantic spotted dolphins estimated using spectral notch approach. A: Equivalent piston radius (EPR) (squares) estimated using the spectral notch method (Fig. S1) as a function of range. Black line represents a significant linear least squares regression (R^2=0.44, F_{17}=13.2, p=0.002) and the grey shaded area represents the 95% confidence interval of the linear regression. B: The half-power beamwidth (HPBW) as a function of range. C: Observed HPBW divided by the HPBW that would be expected if beamwidth was determined by a constant EPR (the mean EPR estimated by spectral notch method) and a changing centroid frequency (measured for each click). Black line represents a significant linear least squares regression (R^2=0.49, F_{17}=16.3, p=0.0008), and the grey, shaded area represents the 95% confidence interval of the linear regression.

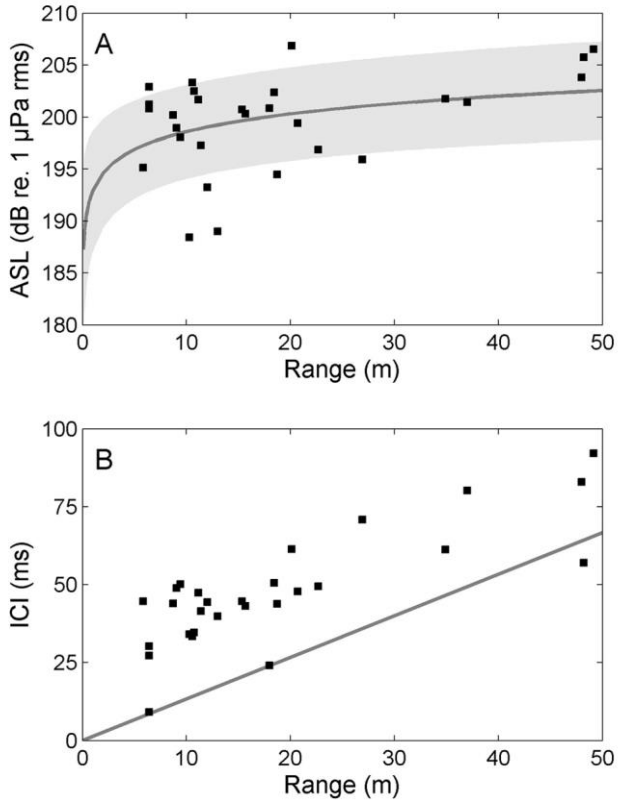

Fig. S3. Adjustment of apparent source level and interclick interval with range for on-axis Atlantic spotted dolphin biosonar clicks. A: Apparent source level as a function of range (squares), with a log-linear fit to range overlaid (grey line and confidence intervals). B: Interclick intervals as a function of range (squares). Grey line shows the two-way travel time between the dolphin and the array.