

Fig. S1: Results from CTD profile, showing temperature (green (celsius), salinity (psu), and oxygen (black(ml/l) measured from the surface down to 210 meters.

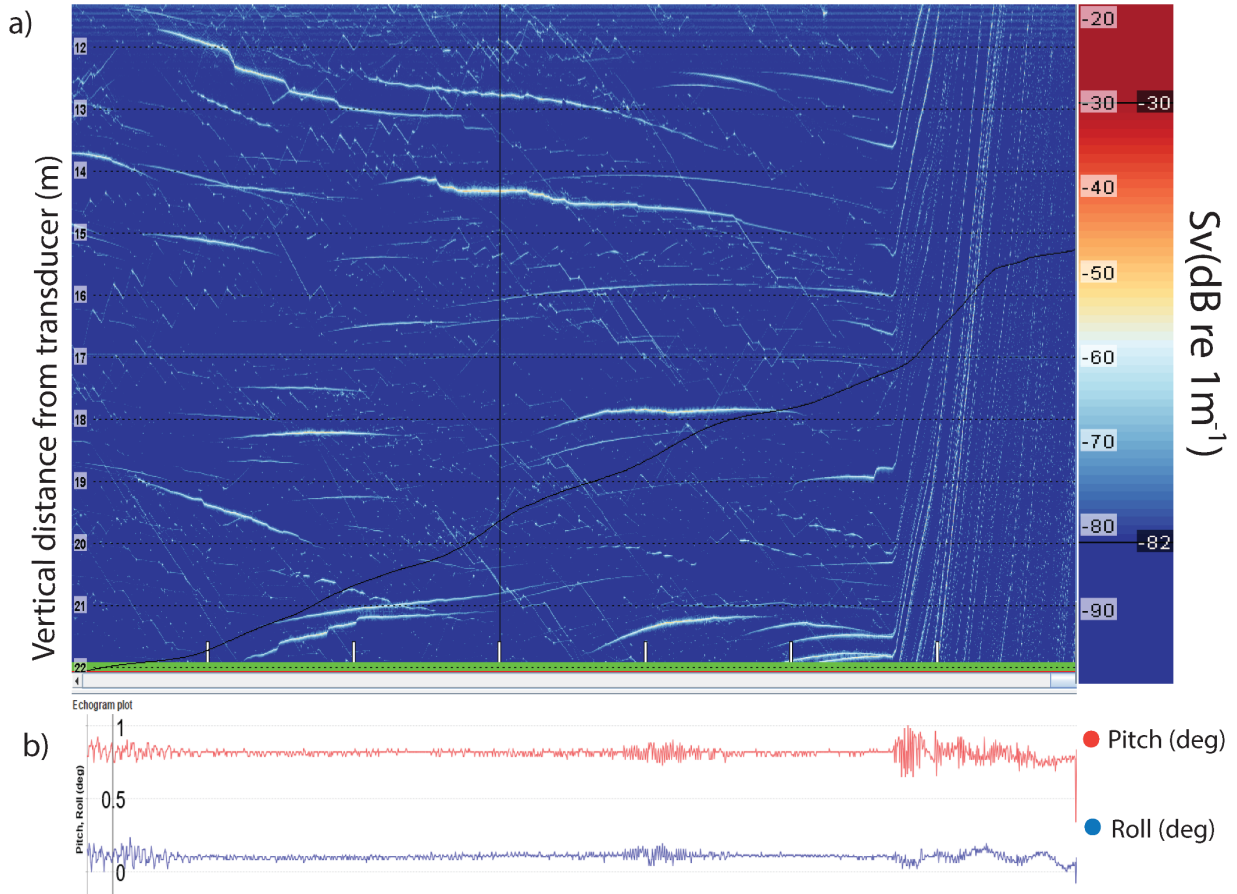


Fig. S2. The figure is displaying an echogram with fish and zooplankton targets (a). The lower panel (b) is showing the tilt and roll of the transducer in degrees, which in all cases are very low, and thus likely not affecting the final trajectories.

Table S1: Results from the calibration of the echosounders.

	<b>Simrad EK80 TS-Probe, FM pulses</b>			
Transducer type	ES70-7CD	ES120-7CD	ES120-7CD	ES200-7CD
Frequency (kHz)	56-87	97-160	160-260	280-450
Power (W)	500	400	150	50
Gain (dB)	27.59	26.79	26.2	24.85
Equivalent beam angle (dB)	-20.7	-20.7	-20.7	-20.7
Taper (%)	1.74	1.0	0.60	0.34
Absorption coefficient (dB km <sup>-1</sup> )	23.8	40.02	55.55	86.63
Pulse duration (ms)	2.048	2.048	2.048	2.048
Half power beam widths (along/athwart ship) (deg)	6.96/6.87	7.26/7.28	6.86/6.91	6.73/6.77
Transducer angle sensitivity (deg) (along ship and athwart ship)	23.0	23.0	23.0	23.0
Sound speed (measured) (m s <sup>-1</sup> )	1500	1500	1500	1500

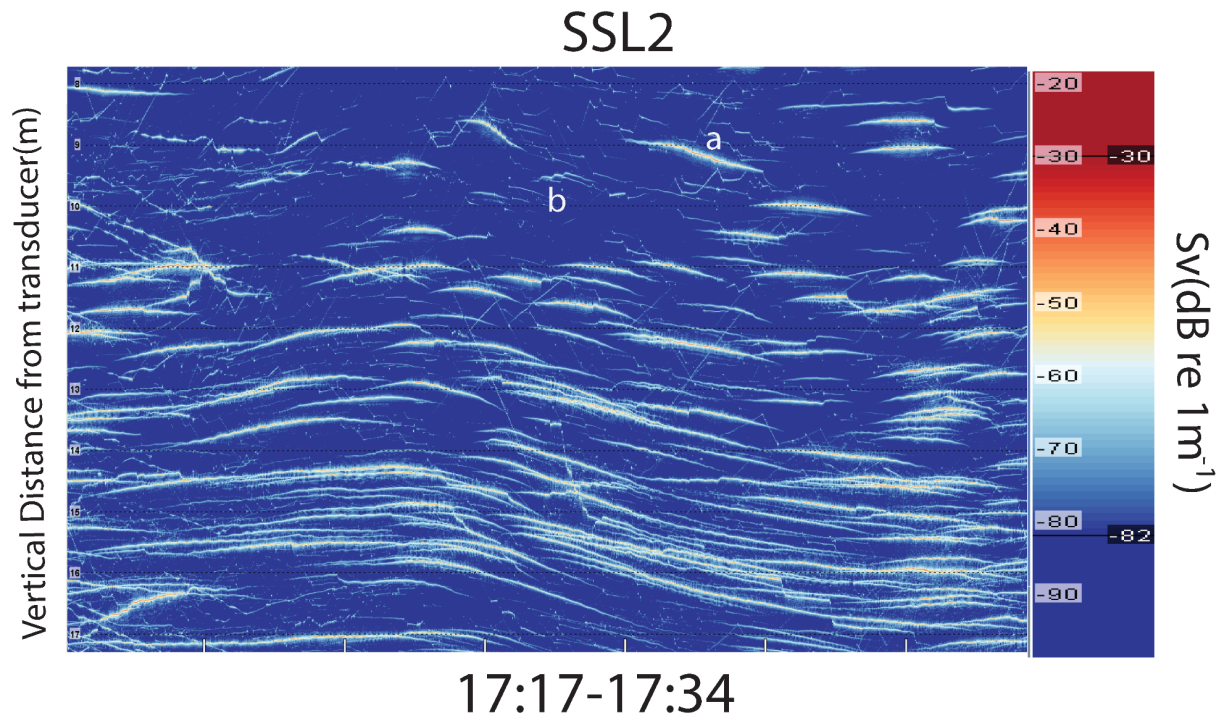


Fig. S3: Echogram of SSL2 for a period of 17 minutes. The stronger targets exemplified in (a) are mesopelagic fish, while the weaker targets (b) are zooplankton.

Table S2: SED-Filters for target tracking using broadband pulses

**SED-Filters for target tracking using broadband pulses**

Min TS (dB)	-75
Pulse length determination level (dB)	6
Max one-way gain compensation (dB)	6

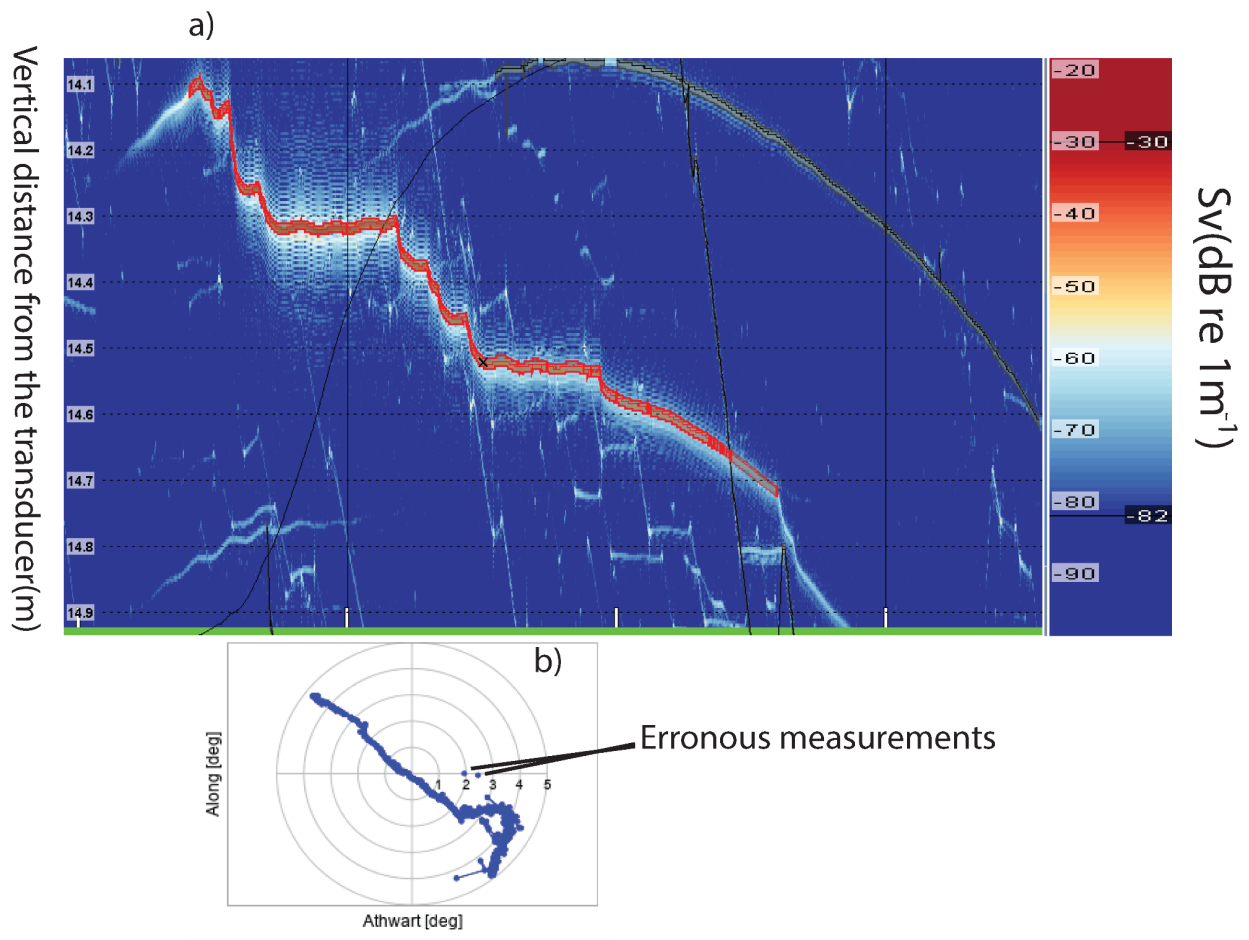


Fig. S4: Visual track scrutinization of (a) Echogram, where the tracks vertical position is studied. The example track is highlighted with red, while (b) is showing the estimated positions of the track in the horizontal plane. Erronous positions highlited were removed in the post processing of the tracks before applying the smoothing spline.