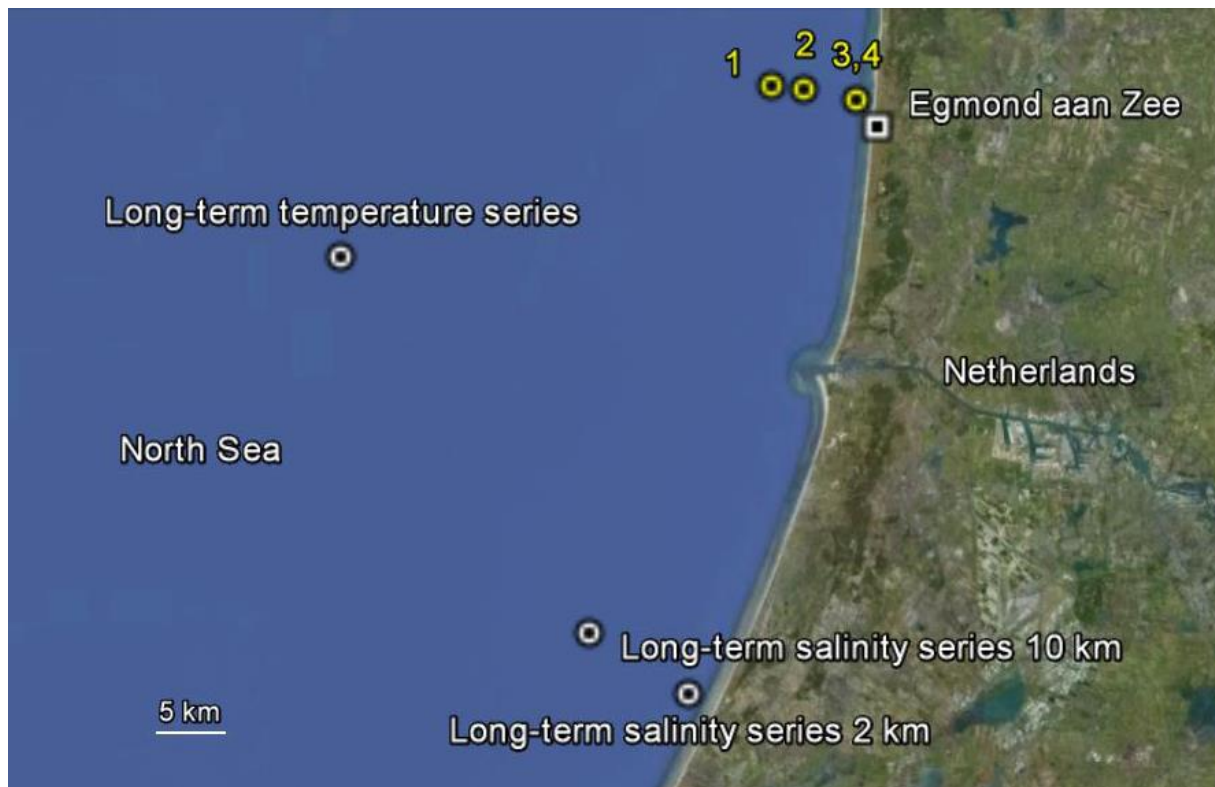
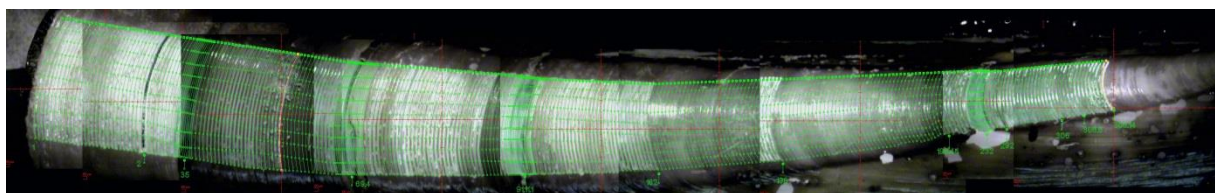


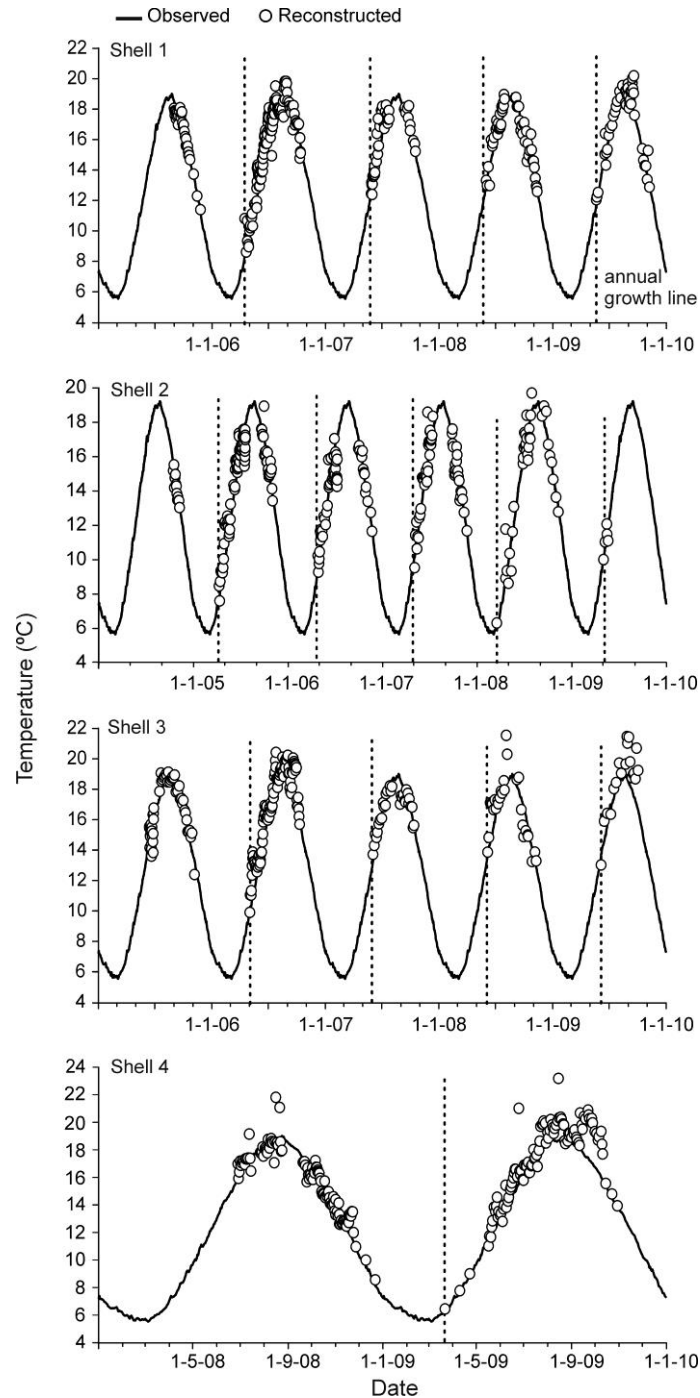
## Supplementary Figures



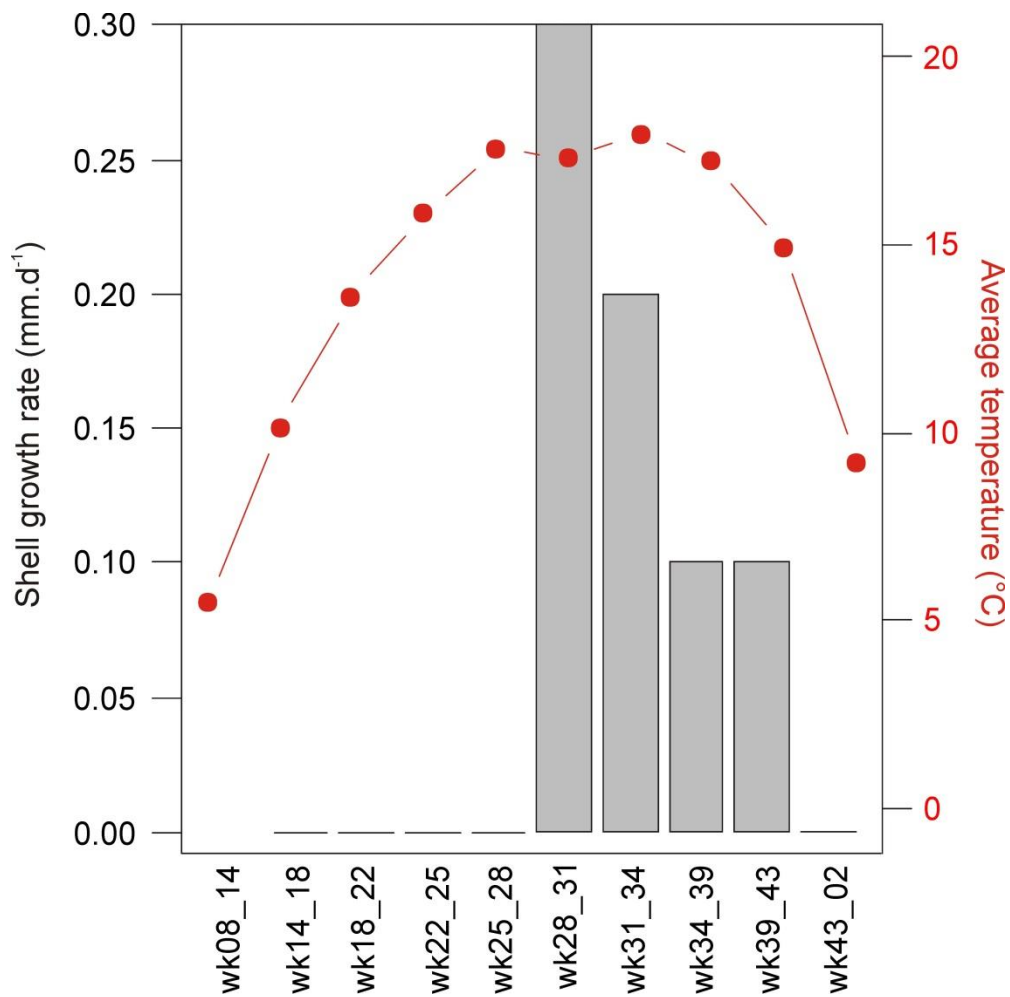
**Fig. S1.** Location of the sampling sites of *E. directus* (shells 1, 2, 3 and 4) and of the sites where water temperature and salinity were measured. Reproduced with permission of Google Earth™ mapping service (image © Aerodata International Surveys).



**Fig. S2.** Image of the valve of *E. directus* shell 1 showing the transects used to drill the samples (green lines).



**Fig. S3.** Comparison of observed and reconstructed water temperatures experienced by *E. directus* during growth. Open circles represent reconstructed temperatures from measured  $\delta^{18}\text{O}$  values using Eq. [1] solved for temperature (see text); line represents observed temperatures in the field (from <http://live.waterbase.nl/> waterbase). Vertical dotted lines represent annual growth lines observed on the surface of the shell and in the acetate peels.



**Fig. S4.** Shell growth (mm.d<sup>-1</sup>) and water temperature (°C) measured in the field in 2011 (wk08\_14: 22 February to 07 April; wk14\_18: 07 April to 03 May; wk18\_22: 03 to 31 May; wk22\_25: 31 May to 24 June; wk25\_28: 24 June to 12 July; wk28\_31: 12 July to 02 August; wk31\_34: 02 to 23 August; wk34\_39: 23 August to 27 September; wk39\_43: 27 September to 25 October; wk43\_02: 25 October to 11 January 2012) (adapted from Witbaard et al., 2012).