The following supplements accompany the article

Benthic community response to a scallop dredging closure within a dynamic seabed habitat

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Supplement 1. Spatial distribution and frequency of scallop dredging throughout the sampling period (December 2009 – April 2011)

The spatial distribution and frequency of scallop dredging activity over the Cardigan Bay Special Area of Conservation (SAC) fishing ground was derived using the Vessel Monitoring System (VMS) data provided by the Marine Management Organization for the periods November 2008 to May 2009, which covers the open fishing season prior to our December 2009 survey; March to May 2010, prior to our June 2010 survey; November to December 2010, prior to December 2010 survey; and November 2010 to April 2011, prior to our April 2011 survey. We defined fishing frequency as the number of hours an area of 1 km^2 was fished in 1 mo. The sum of the number of hours fished (calculated as the time interval between 2 consecutive records) in each 1 km^2 cell was calculated in ArcGIS 9.3, giving a relative estimate of fishing frequency per month during the open scallop dredging seasons. Fishing frequency ranged from 0 to 30 h km^{-2} mo^{-1} for the 2 mo open season between November and December 2010, and from 0 to 15 h km^{-2} mo^{-1} for the other open seasons. The change in the spatial distribution of fishing activity is notable for the open season before and those after 2009 (i.e. before and after the establishment of a permanently closed area for scallop dredging in 75% of the SAC); all the offshore sampling stations in our study (i.e. those beyond 3 nautical miles) were dredged at some point.

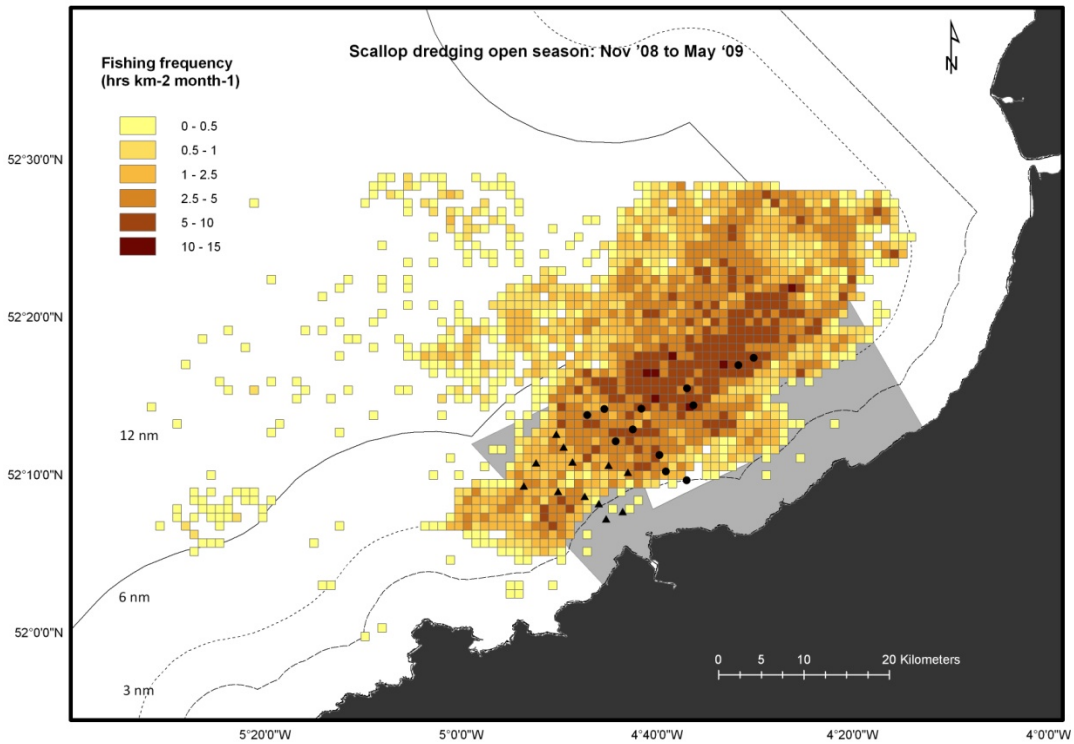

Fig. S1. Fishing frequency for scallop dredging in the permanently closed area (grey) and the seasonally fished area (white) during the open season November 2008 to May 2009. Circles and triangles represent the stations sampled during this study and are the same as those described in Fig. 1 in the main text

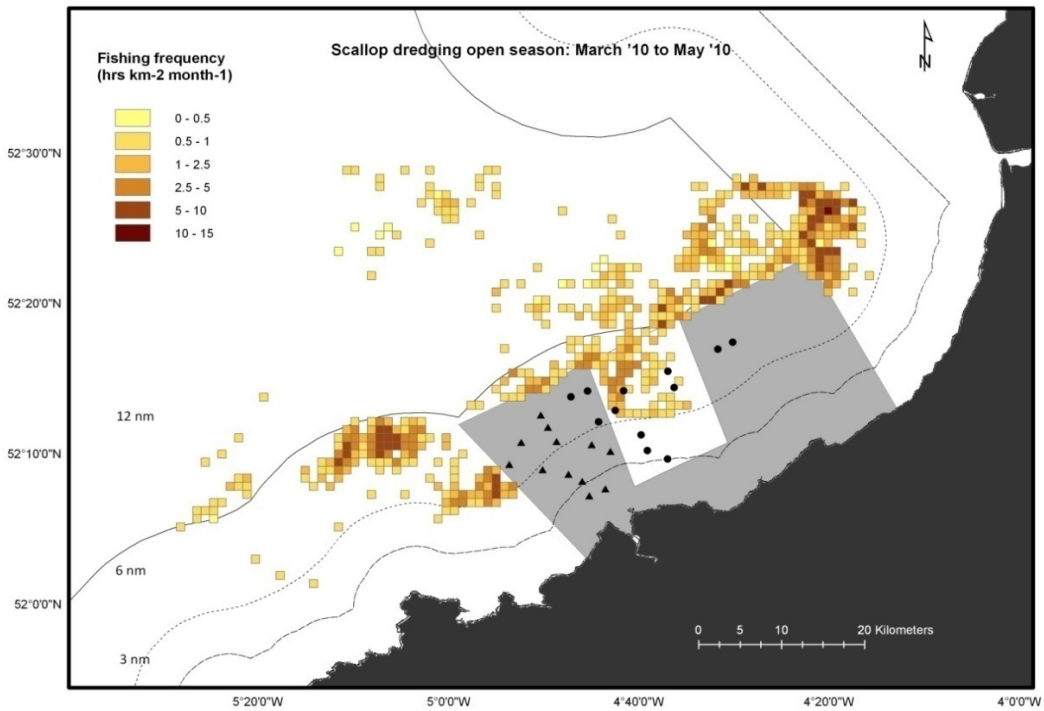

Fig. S2. Fishing frequency for scallop dredging in the permanently closed area (grey) and the seasonally fished area (white) during the open season March to May 2010. Circles and triangles represent the stations sampled during this study and are the same as those described in Fig. 1 in the main text

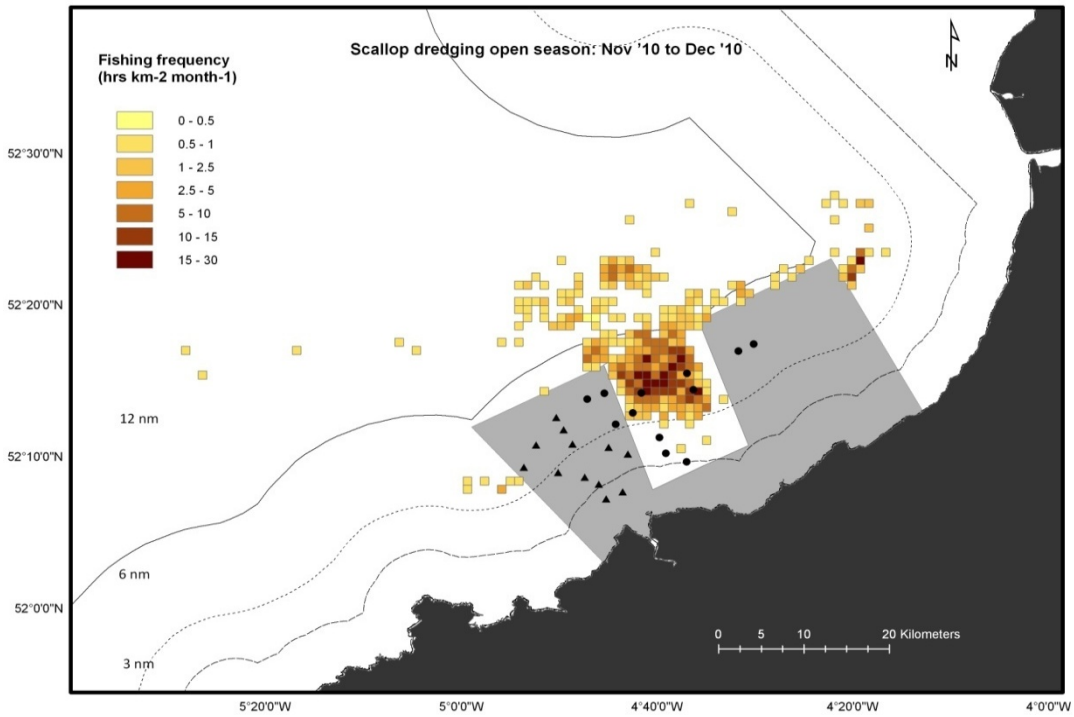

Fig. S3. Fishing frequency for scallop dredging in the permanently closed area (grey) and the seasonally fished area (white) during the open season November to December 2010. Circles and triangles represent the stations sampled during this study and are the same as those described in Fig. 1 in the main text

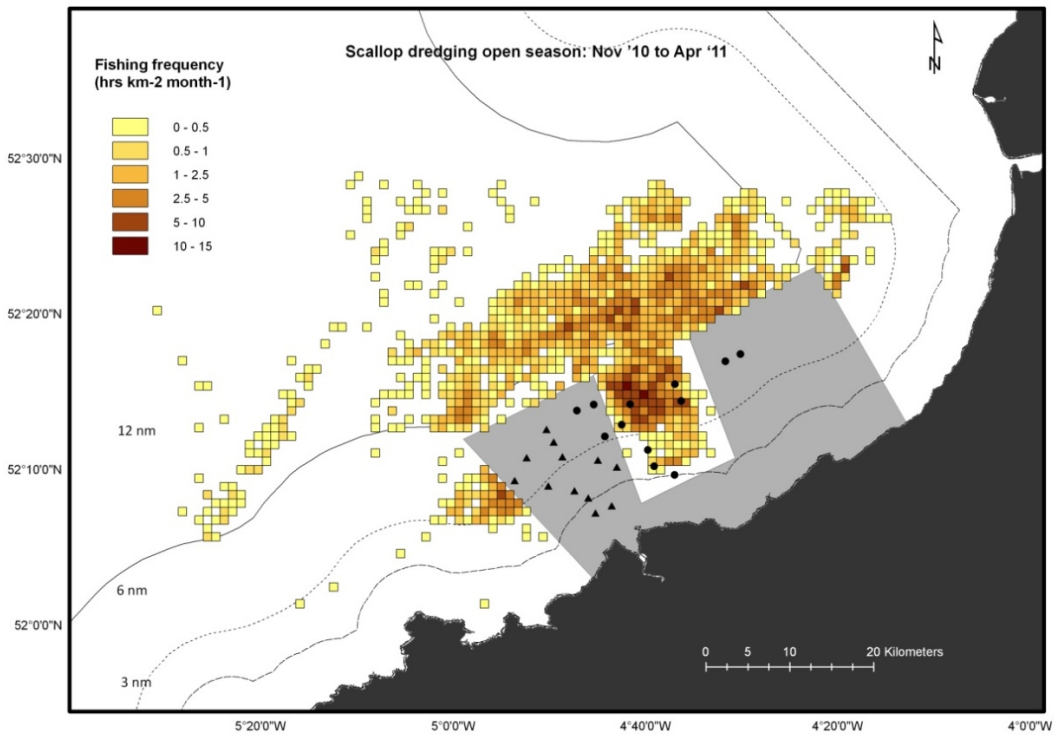

Fig. S4. Fishing frequency for scallop dredging in the permanently closed area (grey) and the seasonally fished area (white) during the open season November 2010 to April 2011. Circles and triangles represent the stations sampled during this study and are the same as those described in Fig. 1 in the main text

Supplement 2. Additional side scan sonar data

Side scan sonar mosaics showing the same area of the seabed from the December 2009 survey (left) and the June 2010 survey (right). The outer edges of both sonar tracks are shown to illustrate the common seabed area covered (blue: December 2009, red: June 2010). The asterisks show the location of a station from the photographic survey which aids correlation between the 2 data sets which are at the same scale and orientation. Features highlighting changes in seabed morphology between surveys are marked in green.

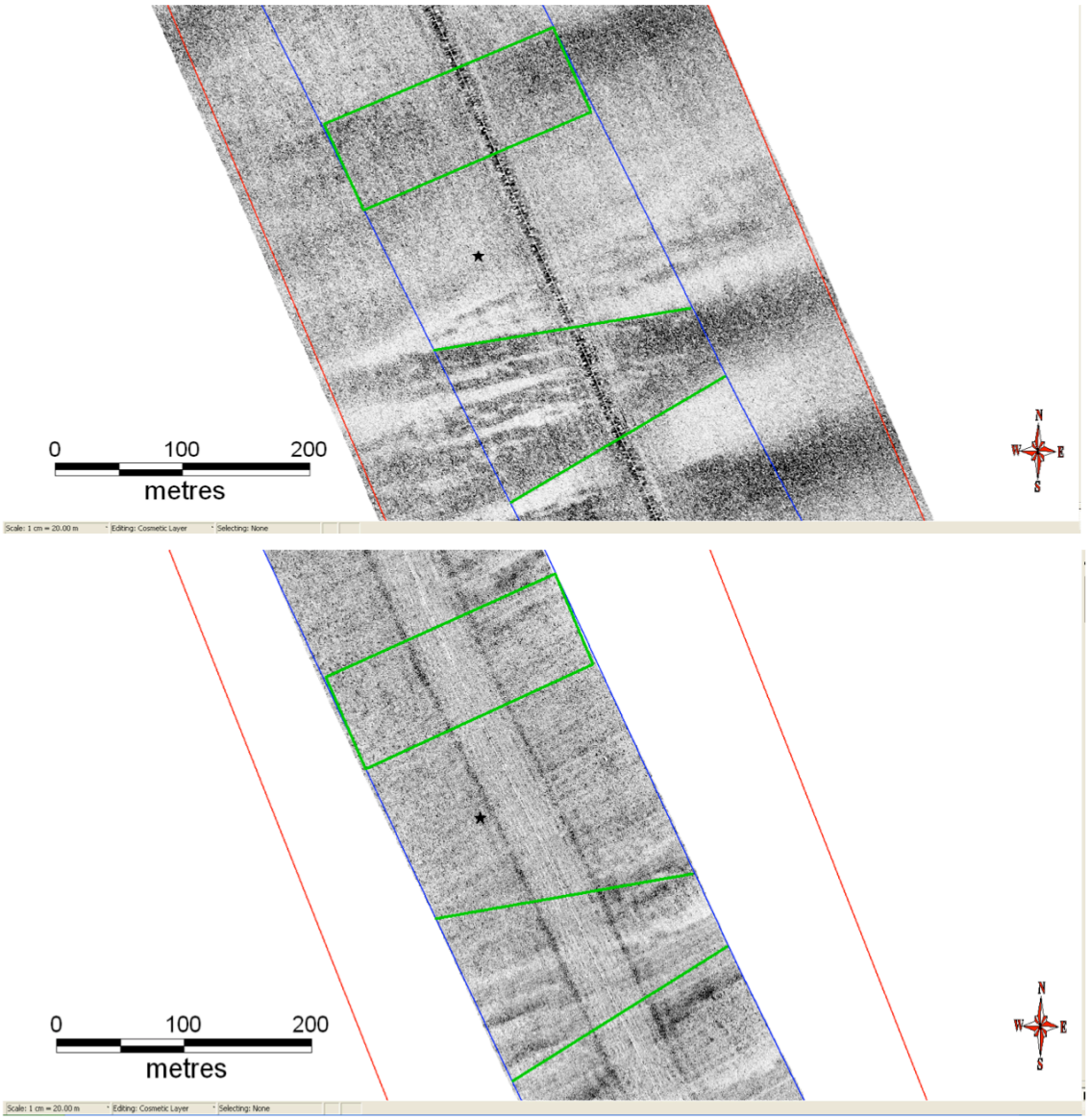

Fig. S5. Two sonar mosaics showing the same area of the seabed from the December 2009 survey (top) and the June 2010 survey (bottom). The outer edges of both sonar tracks illustrate the common seabed area covered (blue: December 2009, red: June 2010). The asterisks show the location of a station from the photographic survey aiding correlation between the 2 data sets which are at the same scale and orientation. Features highlighted in green indicate a sand ribbon dominated environment characterized by coarser sediment in the December 2009 survey, which changes into a finer sediment environment in the June 2010 survey

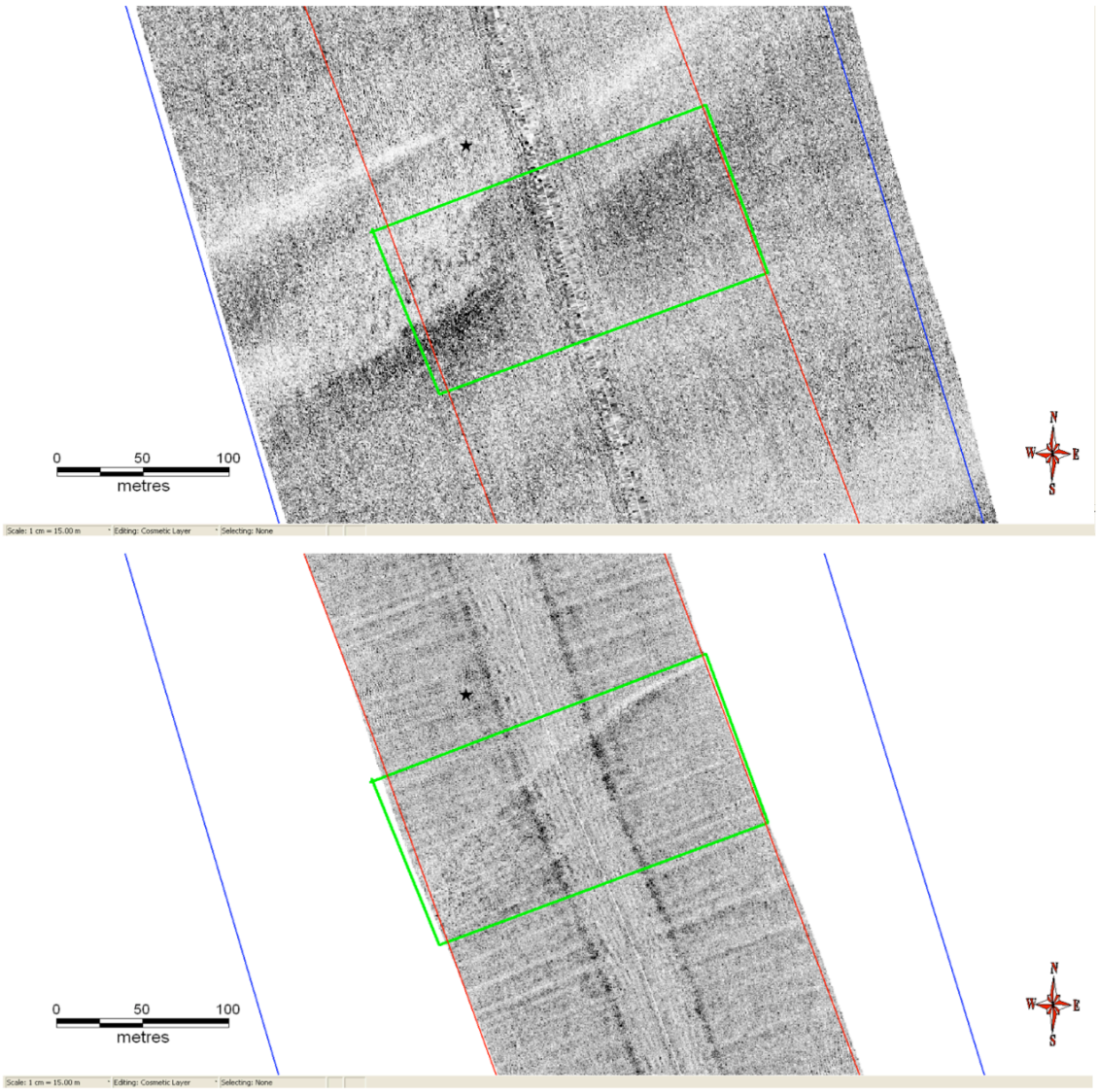

Fig. S6. Two sonar mosaics showing the same area of the seabed from the December 2009 survey (top) and the June 2010 survey (bottom). The outer edges of both sonar tracks illustrate the common seabed area covered (blue: December 2009, red: June 2010). The asterisks show the location of a station from the photographic survey aiding correlation between the 2 data sets which are at the same scale and orientation. Features highlighted in green indicate an area characterized by large sand ribbons in the December 2009 survey which appear to change into smaller and more closely spaced sand ribbons in the June 2010 survey

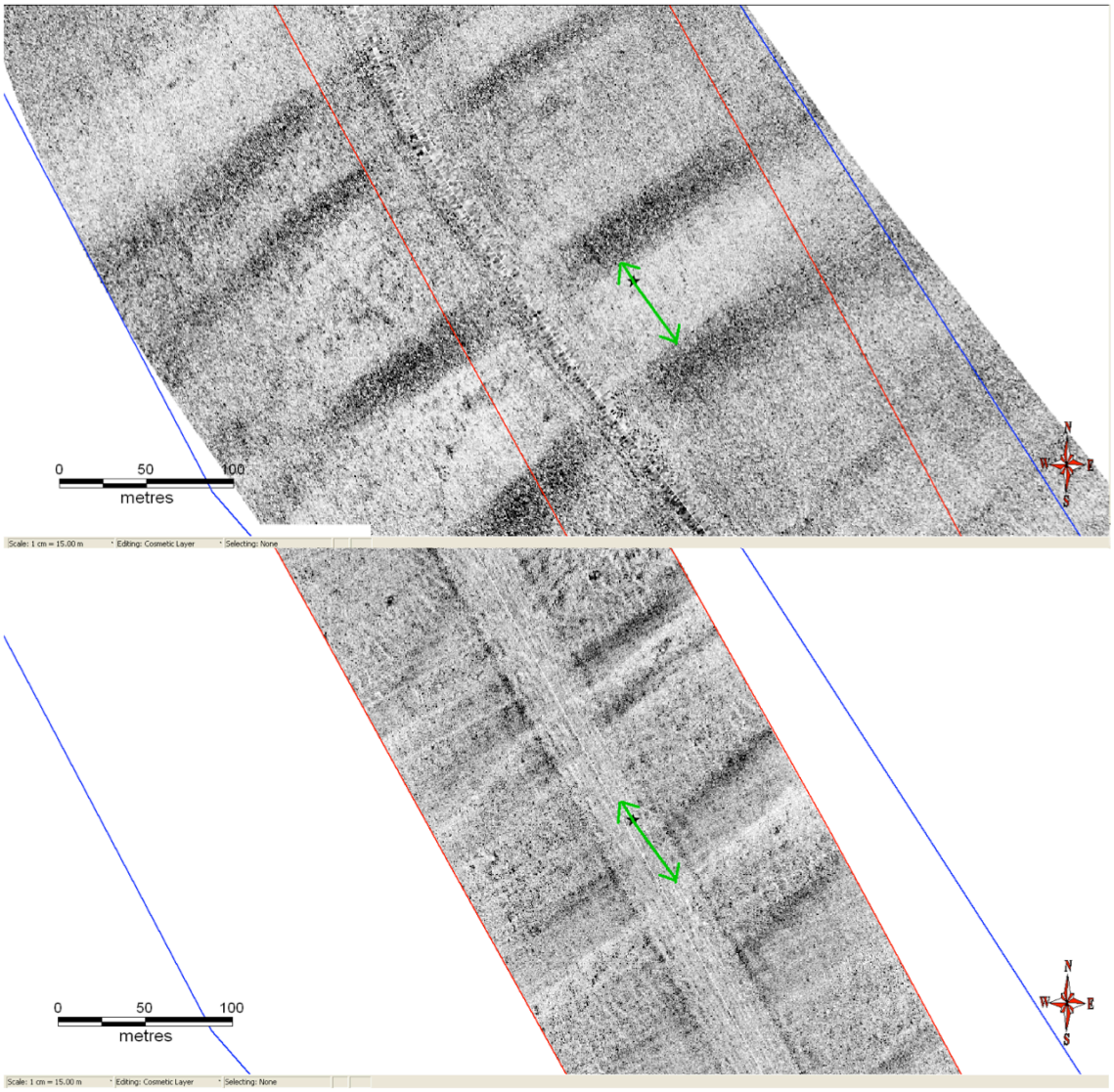

Fig. S7. Two sonar mosaics showing the same area of the seabed from the December 2009 survey (top) and the June 2010 survey (bottom). The outer edges of both sonar tracks illustrate the common seabed area covered (blue: December 2009, red: June 2010). The asterisks show the location of a station from the photographic survey aiding correlation between the 2 data sets which are at the same scale and orientation. In both surveys, the environment is characterized by sand ribbons covering coarser substrate. However, as indicated by the green arrows, the position of the ribbons changed between the 2 surveys