

1 **Supplementary Information:**

2 **Supplementary Fig. S1.** DGGE analysis of AOB *amoA* gene fragments and their
3 transcripts from triplicate sediment samples collected from Hythe (Hy), Alresford (Al) and
4 Brightlingsea (Br) in the June (A), August (B) and October (C). Numbers indicate DGGE
5 bands that were excised and sequenced.

6

7 **Supplementary Fig. S2.** DGGE analysis of AOB 16S rRNA gene fragments and their
8 transcripts from triplicate sediment samples collected from Hythe (Hy), Alresford (Al) and
9 Brightlingsea (Br) in the June (A), August (B) and October (C). Numbers indicate DGGE
10 bands that were excised and sequenced.

11

12 **Supplementary Fig S3.** A neighbor-joining tree of bacterial *amoA* (A) and 16S rRNA gene
13 (B) sequences. The sequences retrieved during this study are shown in bold and include
14 sample location, month. The letter/number codes are in accordance with the bands marked
15 on the DGGE images in Supplementary Figs S1 and S2. Reference strains were obtained
16 from public databases. The horizontal bar represents 5% sequence divergence. The
17 bootstrapped consensus tree was inferred from 1000 replicates and the percentages over
18 50% are given at the nodes.

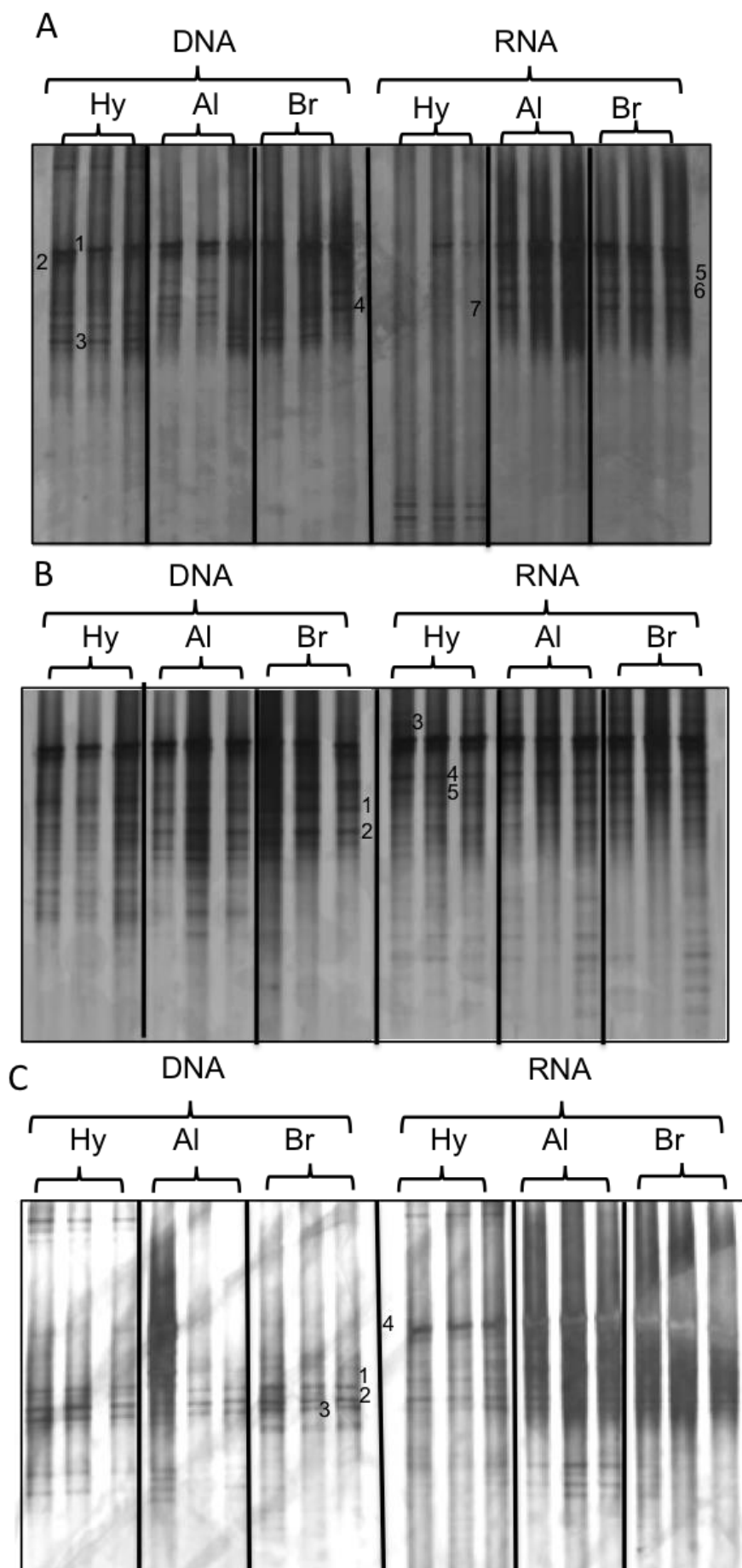
19

20 **Supplementary Fig. S4.** Spatiotemporal patterns of diversity and composition in microbial
21 communities along the Colne estuary. Seasonal changes in composition of bacteria (A) and
22 archaea (C) communities are displayed on the ordination plots (visualised via an NMDS plot
23 based on Jaccard's index). Symbols represent samples from July (circles), August
24 (squares), October (triangles) and January (inverted triangles). Colours represent locations
25 along the Colne estuary from the upper estuary (Hythe; black symbols) through the mid

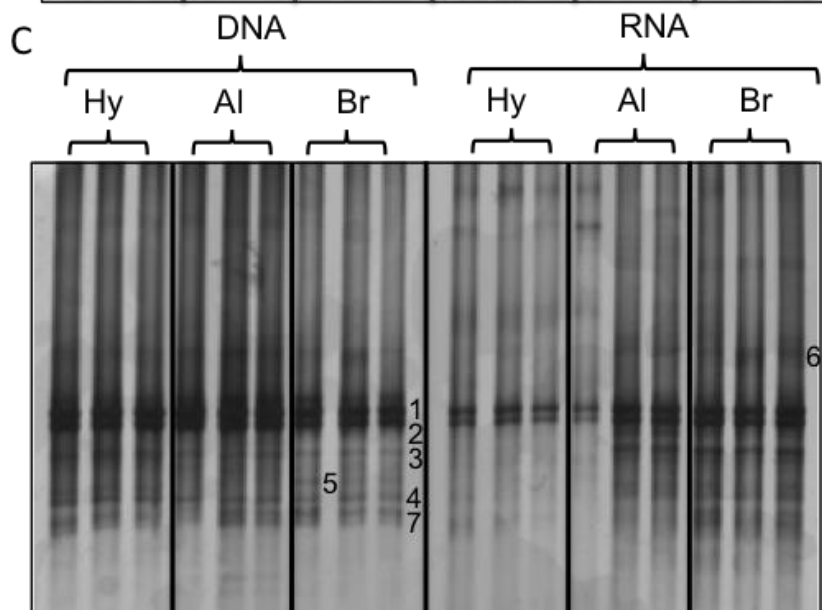
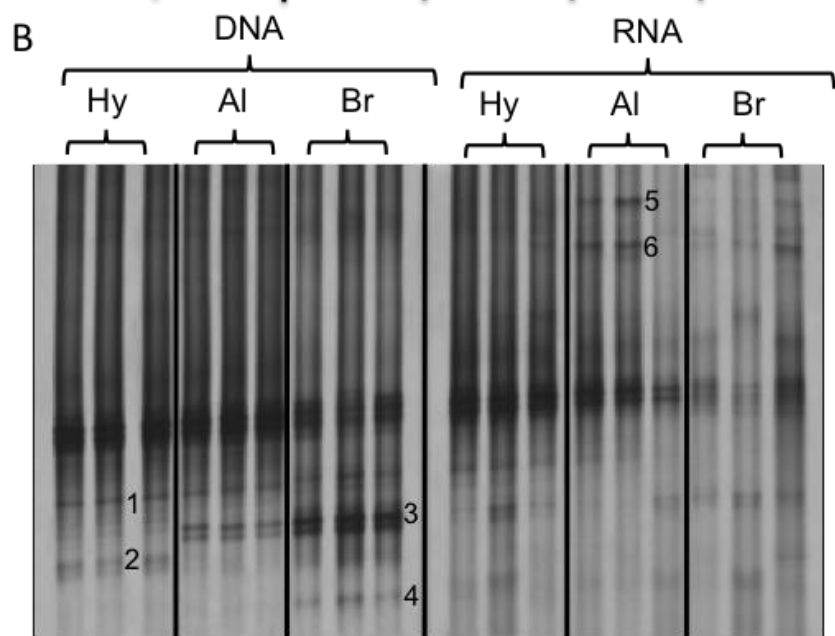
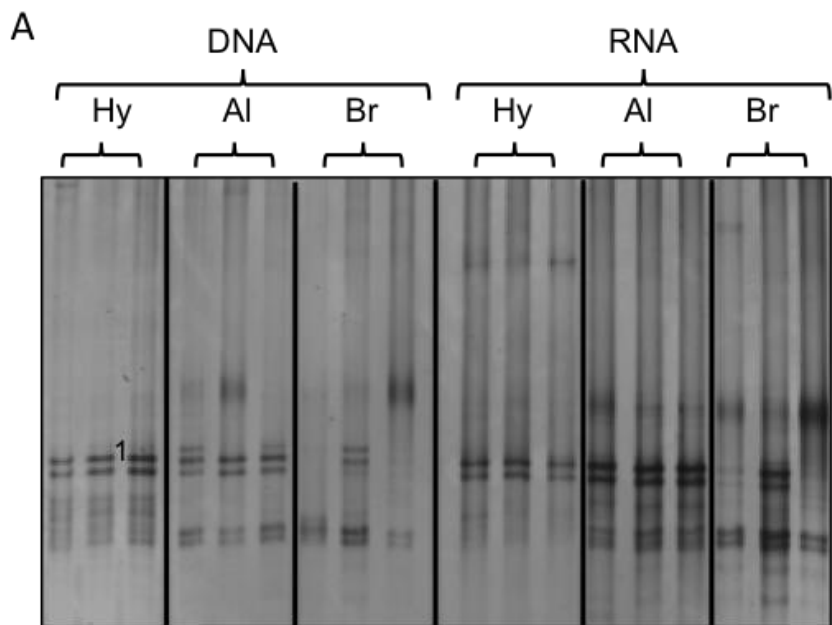
26 estuary (Alresford; grey symbols) to the estuary mouth (Brightlingsea; open symbols).
27 Seasonal changes in diversity of bacteria (B) and archaea (D) communities are shown
28 based on rarefied species richness estimates normalised to the sample with the fewest
29 amplicon reads, colours are the same as those in the ordination plots.

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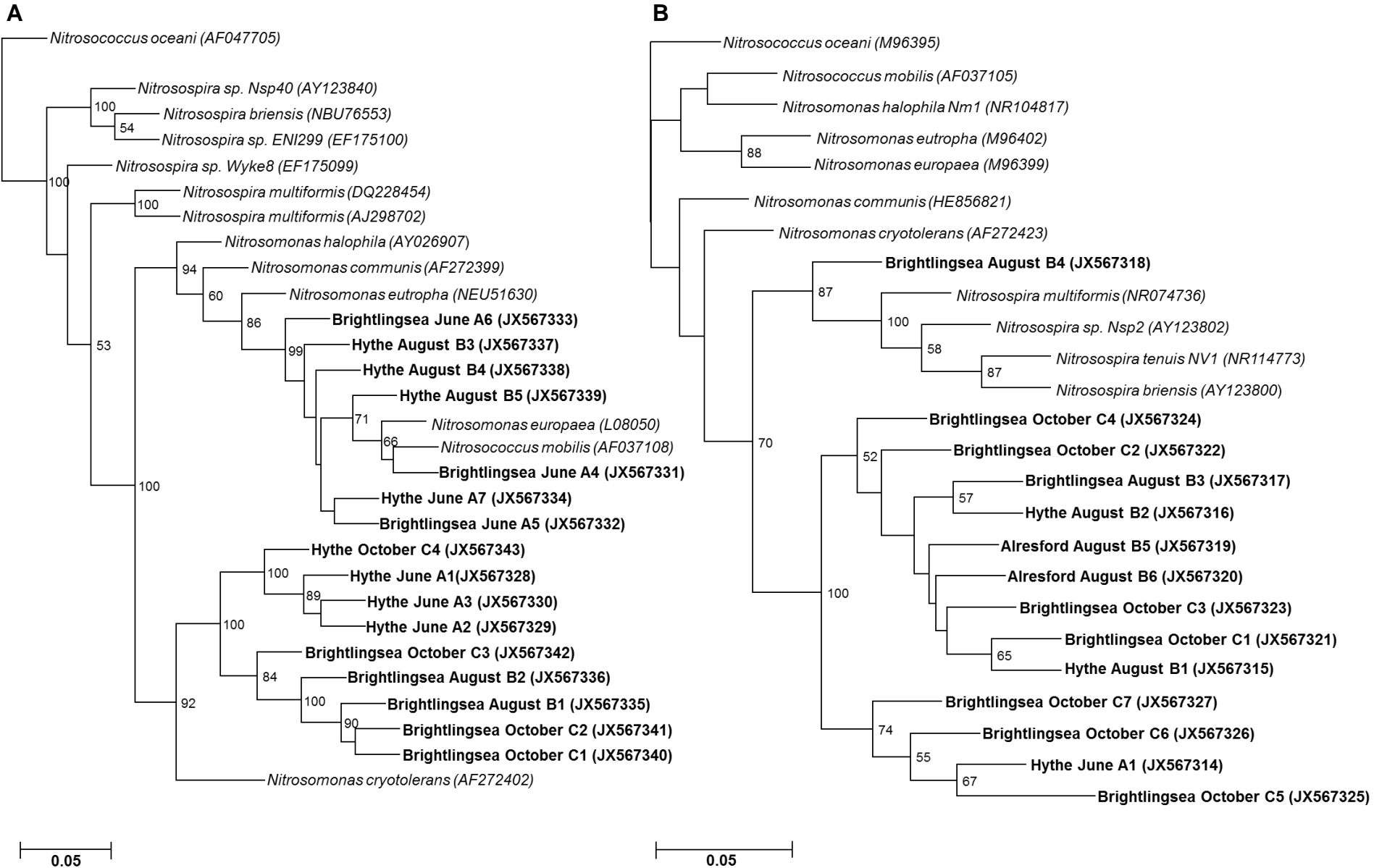
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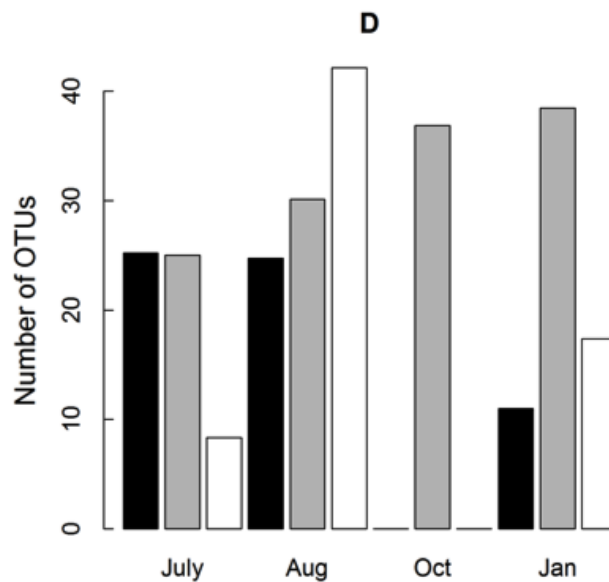
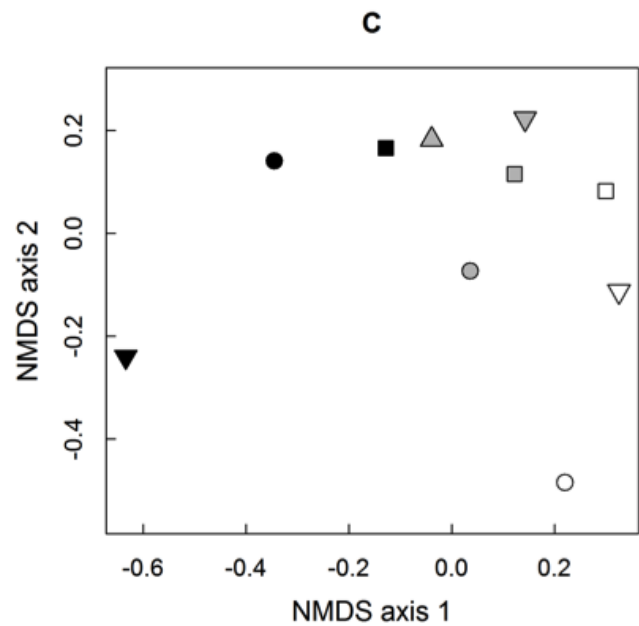
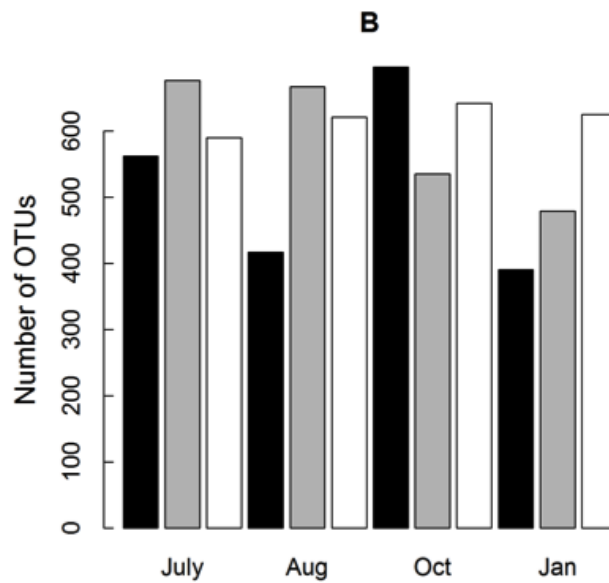
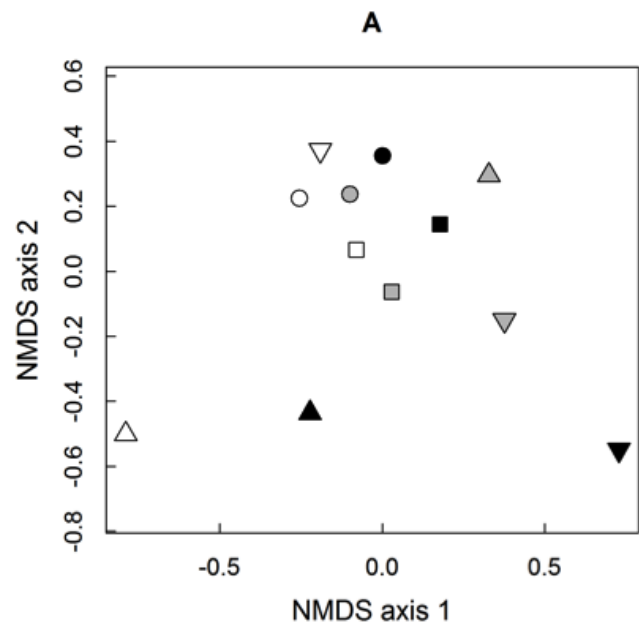
Supplementary Fig. S1



Supplementary Fig. S2



Supplementary Fig. S3



Supplementary Fig. S4