**Appendix A. Supplementary data**

Long-term records of hard-bottom communities in the southwestern Baltic Sea reveal the decline of a foundation species

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Table S1. Classification of genera recorded into functional groups.

|  |  |
| --- | --- |
| Functional group | Genus |
| LFAS | *Acrosiphonia* |
| *Cystoclonium* |
| *Dasya* |
| *Polysiphonia* |
| LMAS | *Chorda* |
| *Dumontia* |
| *Ulva* |
| LMSS | *Chalinula* |
| *Halichondria* |
| MESC | *Conopeum* |
| *Einhornia* |
| *Electra* |
| MFAS | *Aglaothamnion / Callithamnion* |
| *Ceramium* |
| *Chaetomorpha* |
| *Cladophora* |
| *Derbesia* |
| *Ectocarpus* |
| *Pylaiella* |
| *Rhodomela* |
| *Spermothamnion* |
| *Sphacelaria* |
| *Spongomorpha* |
| MFSC | *Laomedea* |
| MMSS | *Balanus* |
| *Mytilus* |
| *Spirorbis* |
| SEAS | *Hildenbrandia* |
| *Hydrolithon* |
| SFAS | *Scagelothamnion* |
| SMSS | *Corophium* |
| *Polydora* |

Table S2. Modelling results of Generalized Linear Mixed Model (GLMM) comparing *Mytilus* coverage in the years before (2005-2009) and after (2010-2015) the decline and between stations of Kiel (1 - 4) and Lübeck (5 - 7) bights. The GLMM was specified based on a gamma-distribution and log-link function. To adjust the within station variability, the station identity was included as random factor.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model component | Estimate | Std. error | t-value | p-value |
| Intercept | 3.304 | 0.211 | 15.645 | < 0.001 |
| After | -1.359 | 0.286 | -4.752 | < 0.001 |
| Lübeck Bight | 0.703 | 0.323 | 2.179 | 0.029 |
| After:Lübeck Bight | 1.311 | 0.437 | 3.002 | 0.003 |

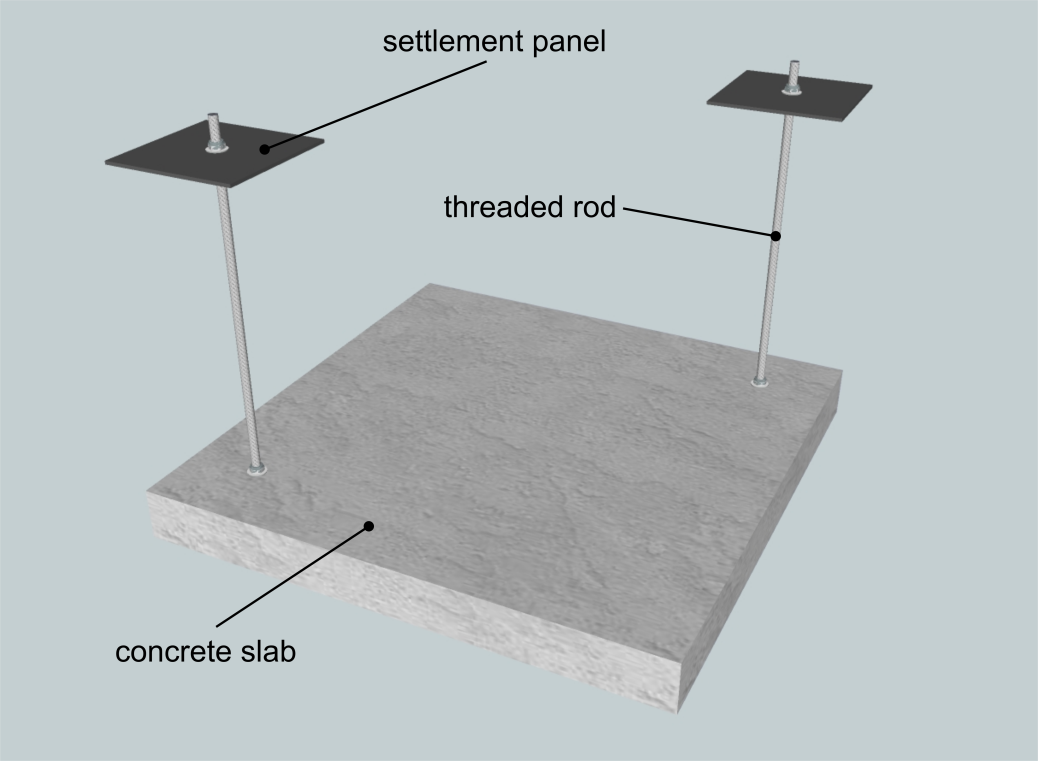


Figure S1. Outline of the deployed settlement panel system.

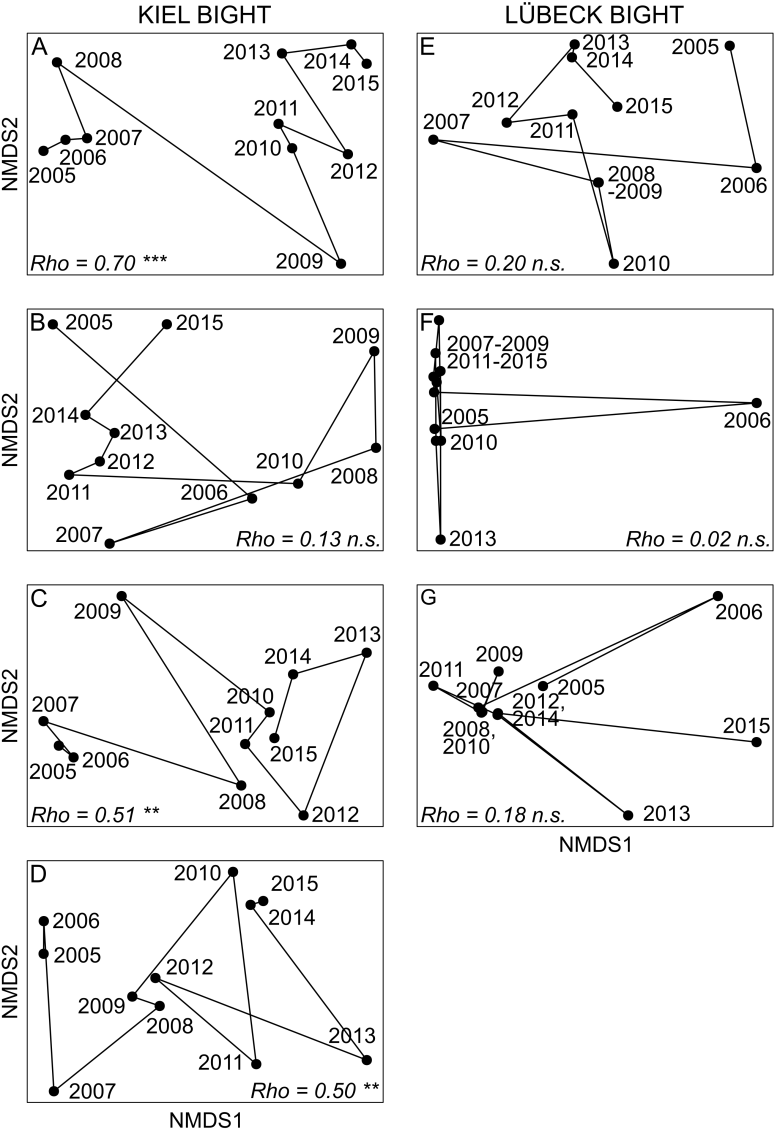


Figure S2. nMDS trajectories based on Bray-Curtis dissimilarities between consecutive years for the functional composition of the communities at the respective monitoring stations. For all plots stress was ≤ 0.08. Correlation coefficient (Rho) and significance levels (\*\*\* p < 0.001; \*\* p < 0.01; \* p < 0.05; n.s. = not significant) of the RELATE analysis are given. Charts are ordered from station 1 (A) to 7 (G).

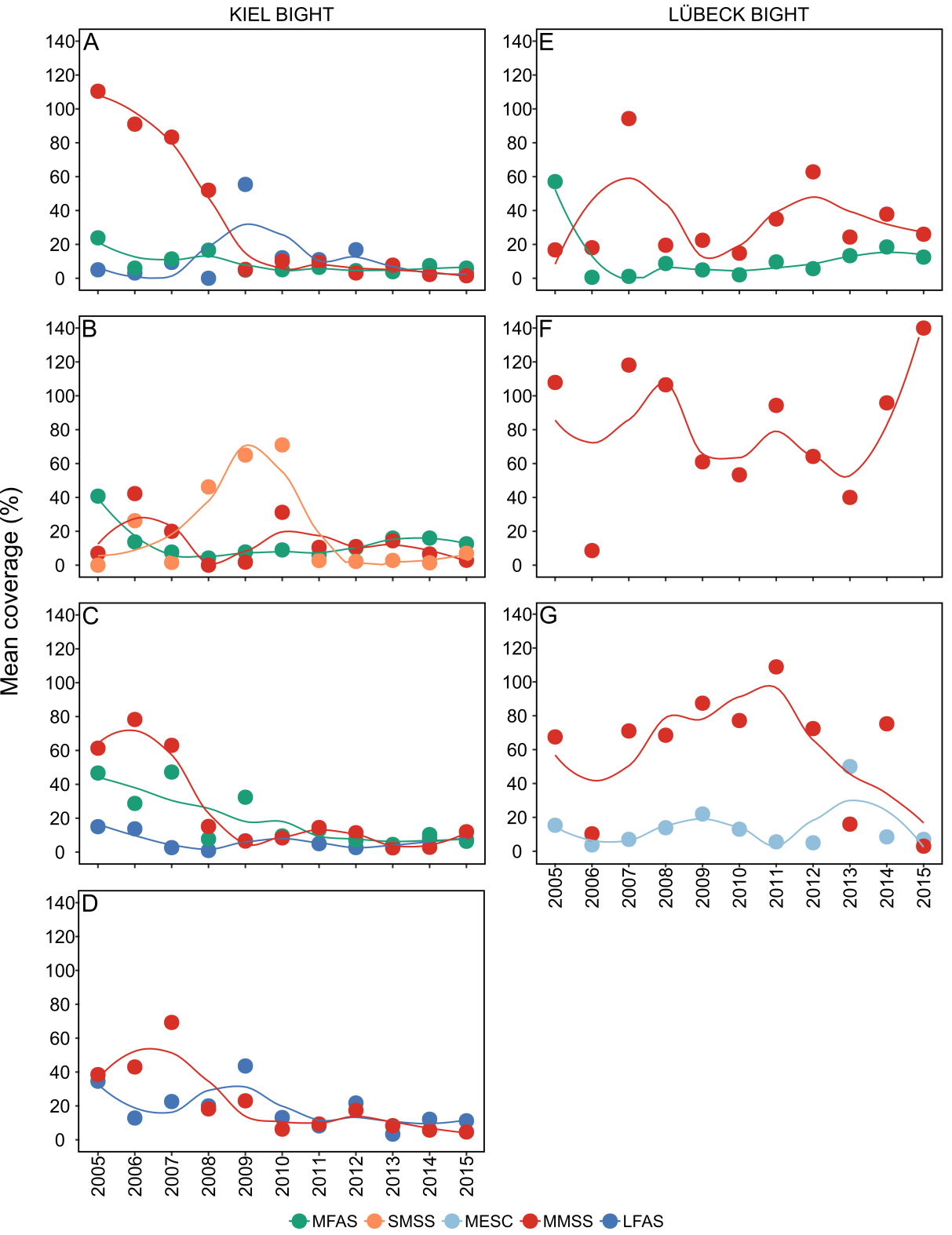


Figure S3. Mean coverage (%) of functional groups (see codes for functional groups in Table 1) that were identified with SIMPER analysis. These groups reach a cumulative contribution in similarity of 75% over the monitoring period 2005-2015. Curves from LOESS smooth functions (span = 0.6) are visualized to highlight temporal dynamics. The panels present results from station 1(A) to station 7 (G).

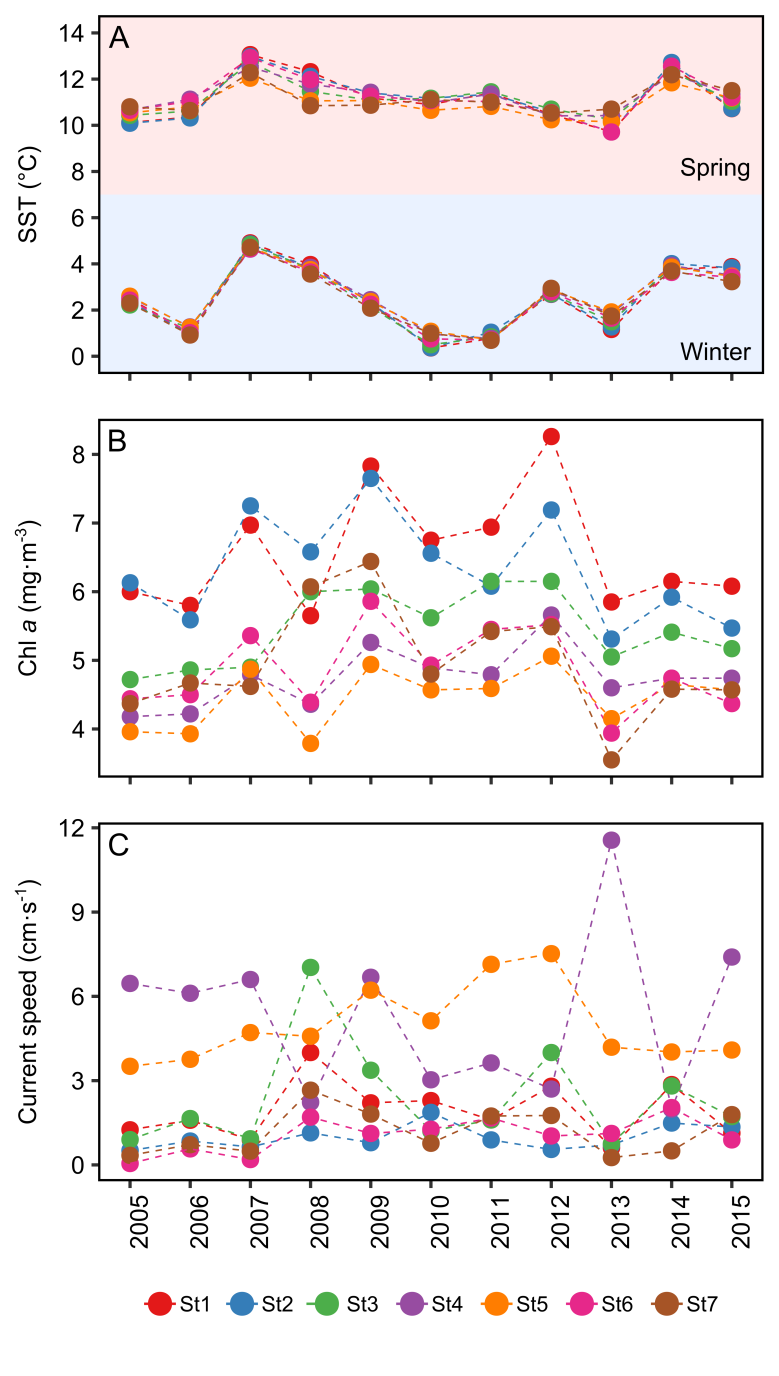


Figure S4. Temporal trends of environmental variables over the entire monitoring period (2005-2015). Mean values of sea surface temperature in spring and winter (SST; A), chlorophyll *a* concentration (Chl *a*; B) and current speed (C) in spring are presented. Note that only values recorded for spring were included in the Generalized Additive Mixed Model (GAMM).