

Figure S1. Partial effects plots of the interactive and non-linear spatial effects of latitude and longitude on the percentage cover of each focal taxon (n = 392). Lines represent cubic splines ($\pm 95\%$ credible interval, shading) fitted using generalised additive models with beta distributed errors and a logit link. Splines show either negative or positive effects relative to the overall mean of the response variable centered on zero. The non-linear interaction between latitude and longitude on cover was a tensor product smoother and visualised as contour plots.

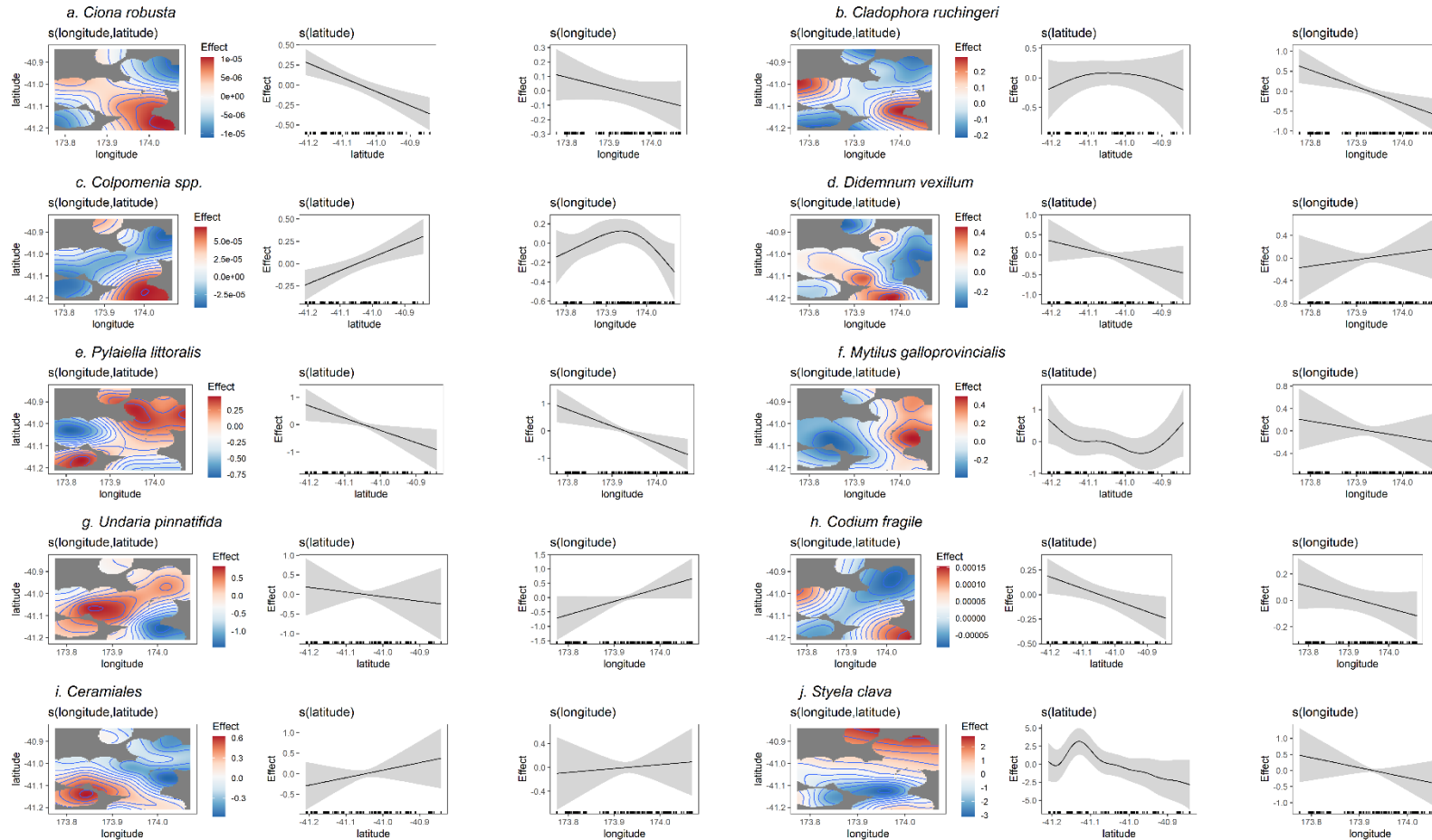


Table S1. Results of generalised additive models using beta distributed errors and a logit link to test spatio-temporal patterns and the effects of habitat type on the cover of each focal taxon (n = 392).

| Focal taxa | Term | Estimate | S.E. | Statistic | p-value |
|----------------------------------|------------------------|----------|------|-----------|---------|
| Ceramiales | Season | -2.15 | 0.13 | -15.94 | <0.001 |
| | Habitat | -3.51 | 0.12 | -29.73 | <0.001 |
| | Season x Habitat | 2.39 | 0.18 | 13.18 | <0.001 |
| | s(Latitude, Longitude) | | | 24.2 | <0.001 |
| | s(Latitude) | | | 0.78 | 0.38 |
| | s(Longitude) | | | 0.12 | 0.73 |
| <i>Ciona robusta</i> | Season | -0.88 | 0.13 | -6.56 | <0.001 |
| | Habitat | -1.15 | 0.11 | -10.15 | <0.001 |
| | Season x Habitat | 0.88 | 0.17 | 5.07 | <0.001 |
| | s(Latitude, Longitude) | | | 0 | 0.59 |
| | s(Latitude) | | | 15.68 | <0.001 |
| | s(Longitude) | | | 2 | 0.16 |
| <i>Cladophora ruchingeri</i> | Season | 0.01 | 0.16 | 0.06 | 0.95 |
| | Habitat | -0.48 | 0.14 | -3.36 | <0.001 |
| | Season x Habitat | 0.01 | 0.2 | 0.05 | 0.96 |
| | s(Latitude, Longitude) | | | 10.72 | <0.001 |
| | s(Latitude) | | | 1.16 | 0.59 |
| | s(Longitude) | | | 10.65 | <0.001 |
| <i>Codium fragile</i> | Season | -0.64 | 0.15 | -4.35 | <0.001 |
| | Habitat | -0.89 | 0.13 | -7.03 | <0.001 |
| | Season x Habitat | 0.48 | 0.19 | 2.56 | 0.01 |
| | s(Latitude, Longitude) | | | 0 | 0.46 |
| | s(Latitude) | | | 5.96 | 0.01 |
| | s(Longitude) | | | 2.18 | 0.14 |
| <i>Colpomenia</i> spp. | Season | 0.64 | 0.15 | 4.22 | <0.001 |
| | Habitat | 0 | 0.14 | 0.03 | 0.98 |
| | Season x Habitat | 0.25 | 0.18 | 1.38 | 0.17 |
| | s(Latitude, Longitude) | | | 0 | 0.58 |
| | s(Latitude) | | | 11.46 | <0.001 |
| | s(Longitude) | | | 8.56 | 0.07 |
| <i>Didemnum vexillum</i> | Season | 0.25 | 0.1 | 2.54 | 0.01 |
| | Habitat | -1.77 | 0.11 | -16.45 | <0.001 |
| | Season x Habitat | -0.36 | 0.15 | -2.4 | 0.02 |
| | s(Latitude, Longitude) | | | 38.4 | <0.001 |
| | s(Latitude) | | | 1.83 | 0.18 |
| | s(Longitude) | | | 0.86 | 0.35 |
| <i>Mytilus galloprovincialis</i> | Season | -0.55 | 0.13 | -4.15 | <0.001 |
| | Habitat | -3.02 | 0.13 | -23.84 | <0.001 |
| | Season x Habitat | 0.4 | 0.18 | 2.24 | 0.03 |
| | s(Latitude, Longitude) | | | 1.99 | 0.11 |
| | s(Latitude) | | | 12.61 | 0.03 |
| | s(Longitude) | | | 8.66 | 0.12 |
| <i>Pylaiella littoralis</i> | Season | 0.71 | 0.17 | 4.11 | <0.001 |
| | Habitat | 0.53 | 0.15 | 3.53 | <0.001 |

| Focal taxa | Term | Estimate | S.E. | Statistic | p-value | |
|------------------------|----------------------------|----------|-------|-----------|---------|--------|
| | Season x Habitat | 0.32 | 0.21 | 1.56 | 0.12 | |
| | s(Latitude, Longitude) | | | 66.45 | <0.001 | |
| | s(Latitude) | | | 6.79 | 0.01 | |
| | s(Longitude) | | | 10.99 | <0.001 | |
| <i>Styela clava</i> | Season | -0.05 | 0.1 | -0.5 | 0.62 | |
| | Habitat | 0.32 | 0.09 | 3.73 | <0.001 | |
| | Season x Habitat | -0.39 | 0.12 | -3.24 | <0.001 | |
| | s(Latitude, Longitude) | | | 244.12 | <0.001 | |
| | s(Latitude) | | | 77.86 | <0.001 | |
| | s(Longitude) | | | 0.71 | 0.4 | |
| | <i>Undaria pinnatifida</i> | Season | 1.29 | 0.15 | 8.34 | <0.001 |
| | | Habitat | -0.98 | 0.15 | -6.64 | <0.001 |
| Season x Habitat | | -0.73 | 0.2 | -3.68 | <0.001 | |
| s(Latitude, Longitude) | | | | 88.67 | <0.001 | |
| | s(Latitude) | | | 0.51 | 0.47 | |
| | s(Longitude) | | | 7.43 | 0.01 | |

Table S2. Results of the exponential decay models fitted for the percentage cover of each taxon in relation to the distance from the nearest farm (m). a = pest cover at distance 0 (i.e. farm sites) and b is the rete of exponential decay for every unit increase in distance (m).

| taxa | term | estimate | S.E. | statistic | P - values |
|----------------------------------|------|----------|-------|-----------|------------------|
| <i>Ciona robusta</i> | a | 1.357 | 0.139 | 9.757 | <0.001 |
| | b | -0.03 | 0.021 | -1.39 | 0.165 |
| <i>Cladophora ruchingeri</i> | a | 9.219 | 1.036 | 8.899 | <0.001 |
| | b | -0.005 | 0.002 | -2.633 | <0.01 |
| <i>Colpomenia spp.</i> | a | 1.109 | 0.115 | 9.612 | <0.001 |
| | b | 0 | 0 | -0.113 | 0.91 |
| <i>Didemnum vexillum</i> | a | 5.598 | 0.269 | 20.842 | <0.001 |
| | b | -0.068 | 0.093 | -0.732 | 0.465 |
| <i>Pylaiella littoralis</i> | a | 9.845 | 1.04 | 9.463 | <0.001 |
| | b | 0 | 0 | -0.136 | 0.891 |
| <i>Mytilus galloprovincialis</i> | a | 54.214 | 1.401 | 38.688 | <0.001 |
| | b | -0.035 | 0.008 | -4.508 | <0.001 |
| <i>Undaria pinnatifida</i> | a | 17.696 | 1.303 | 13.585 | <0.001 |
| | b | -0.027 | 0.012 | -2.214 | <0.05 |
| <i>Codium fragile</i> | a | 2.328 | 0.35 | 6.653 | <0.001 |
| | b | -0.007 | 0.003 | -2.101 | <0.05 |
| <i>Ceramiales</i> | a | 29.505 | 1.37 | 21.531 | <0.001 |
| | b | -0.071 | 0.103 | -0.687 | 0.492 |
| <i>Styela clava</i> | a | 0.194 | 0.023 | 8.46 | <0.001 |
| | b | 0 | 0 | 0.206 | 0.837 |