Supplementary materials for:

**Projecting regions of North Atlantic right whale, *Eubalaena glacialis,* habitat suitability in the Gulf of Maine for the year 2050**

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**Table S1.** Number of presences and absences used in monthly models of *E. glacialis* habitat suitability.Presence-absence data were drawn from the years 1993 and 2009. Duplicate records for the same day and location were discarded.

|  |  |  |
| --- | --- | --- |
| **Month** | **Presences** | **Absences** |
| January | 92 | 5,902 |
| February | 273 | 9,805 |
| March | 556 | 13,379 |
| April | 685 | 21,476 |
| May | 500 | 25,153 |
| June | 299 | 19,817 |
| July | 435 | 13,527 |
| August | 1,371 | 12,863 |
| September | 1,031 | 10,225 |
| October | 160 | 7,065 |
| November | 60 | 6,612 |
| December | 59 | 3,930 |
|  |  |  |

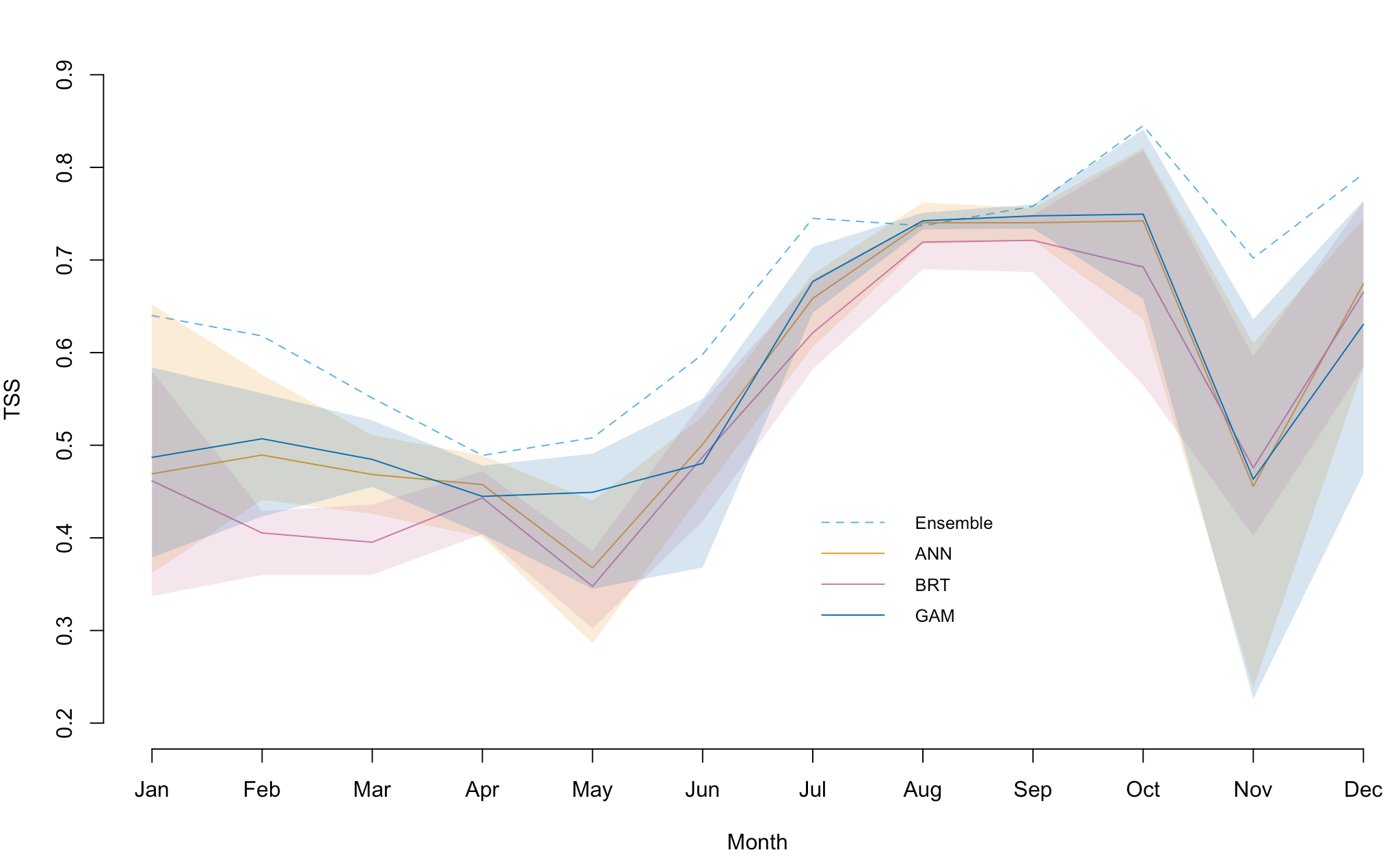
**Table S2.** Correlation coefficients between each environmental covariate.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Covariate** | **SST** | **BTM\_TEMP** | **BAT** | **CAL** | **CHLOR** |
| SST | 1.00 | 0.95 | 0.76 | 0.62 | –0.033 |
| BTM\_TEMP | 0.95 | 1.00 | 0.81 | 0.72 | –0.11 |
| BAT | 0.76 | 0.81 | 1.00 | 0.73967 | –0.22 |
| CAL | 0.62 | 0.72 | 0.74 | 1.00 | –0.43 |
| CHLOR | –0.033 | –0.11 | –0.22 | –0.43 | 1.00 |

**A picture containing graphical user interface

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**Figure S1. Density plots of present and year-2050 environmental covariates.** Density plots comparing present climatological conditions to projected year-2050 climatological conditions for RCP 4.5 and 8.5 for a) sea surface temperature, b) bottom temperature, c) *C. finmarchicus* habitat index, and d) varying logged chlorophyll concentrations.

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**Figure S2. Monthly evaluation true skill statistic (TSS) scores of the individual models and the ensemble.** Evaluation score for each model algorithm for each month using TSS. The lines represent the mean evaluation score over the 10 cross-validation runs. Ranges for individual models are represented by the shaded areas.

**Diagram

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**Figure S3. Artificial neural network response curves.** Response curves for the 10 cross-validation runs of the ANN, or artificial neural network, models in a) July, b) August, c) September, and d) October. Covariates: sea surface temperature (SST), bottom temperature (BTM\_TMP), bathymetry (BAT), *Calanus finmarchicus* habitat index (CAL), and chlorophyll concentration (CHLOR). The y-axes represent the probability of habitat suitability. The x-axes represent the values of the covariates; scales for depth and chlorophyll concentration are logarithmic.

Shape

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**Figure S4. Generalized additive model response curves.** Response curves for the 10 cross-validation runs of the GAMs, in a) July, b) August, c) September, and d) October. Covariates: sea surface temperature (SST), bottom temperature (BTM\_TMP), bathymetry (BAT), *Calanus finmarchicus* habitat index (CAL), and chlorophyll concentration (CHLOR). The y-axes represent the probability of habitat suitability. The x-axes represent the values of the covariates; scales for depth and chlorophyll concentration are logarithmic.

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