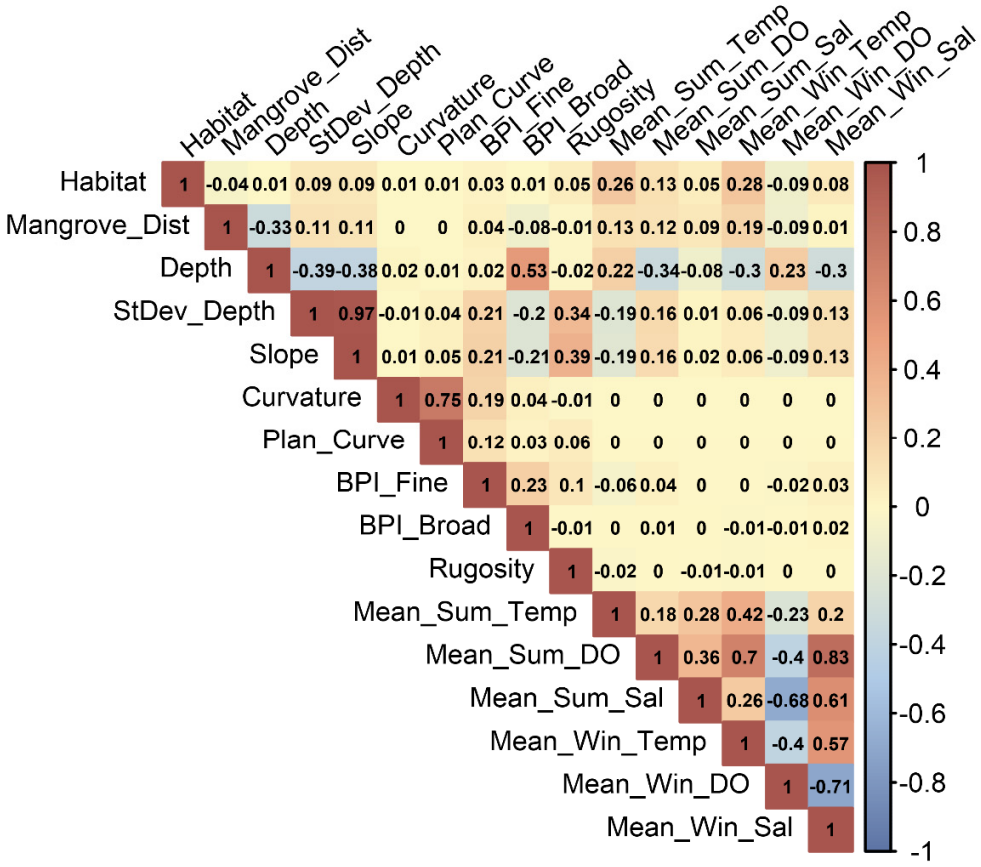
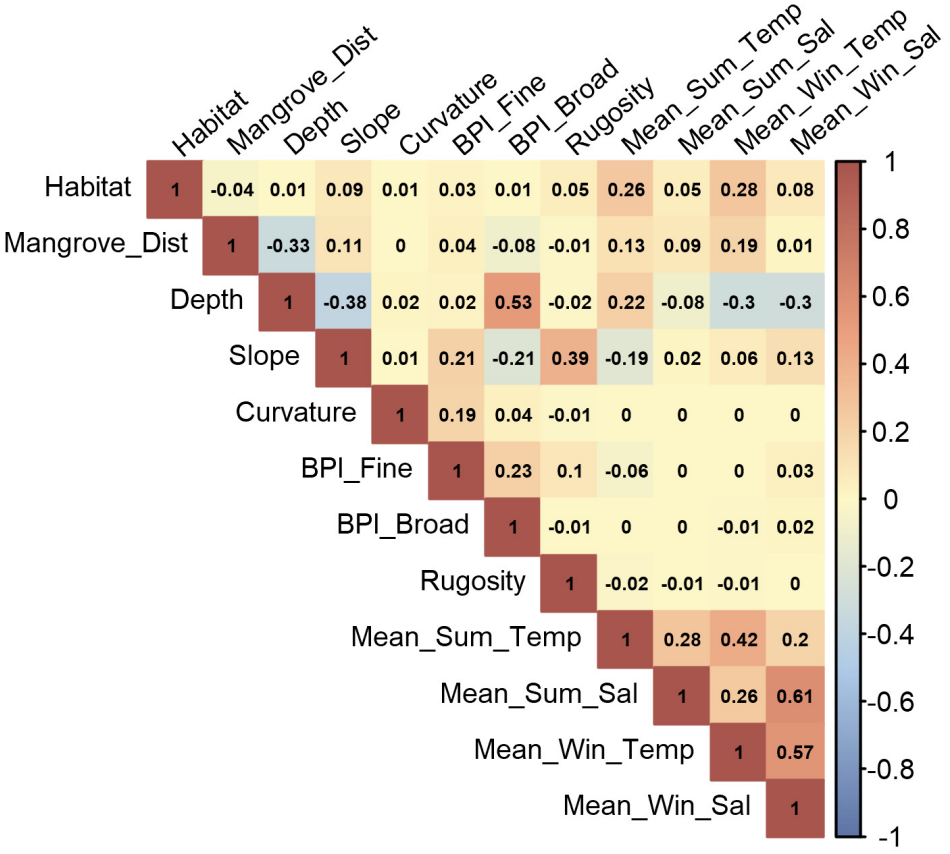
Supplementary Materials

Supplementary Table S1. Variance Inflation Factors. Collinearity among spatial predictors was assessed using variance inflation factor (VIF) scores and Pearson pairwise correlation coefficients (*r*). Predictors were retained for modeling if they fell below thresholds of 5 and |0.7| for VIF and *r*, respectively. See Table 1 in the main text for variable descriptions and Supplementary Figures 1 and 2 for correlation matrices.

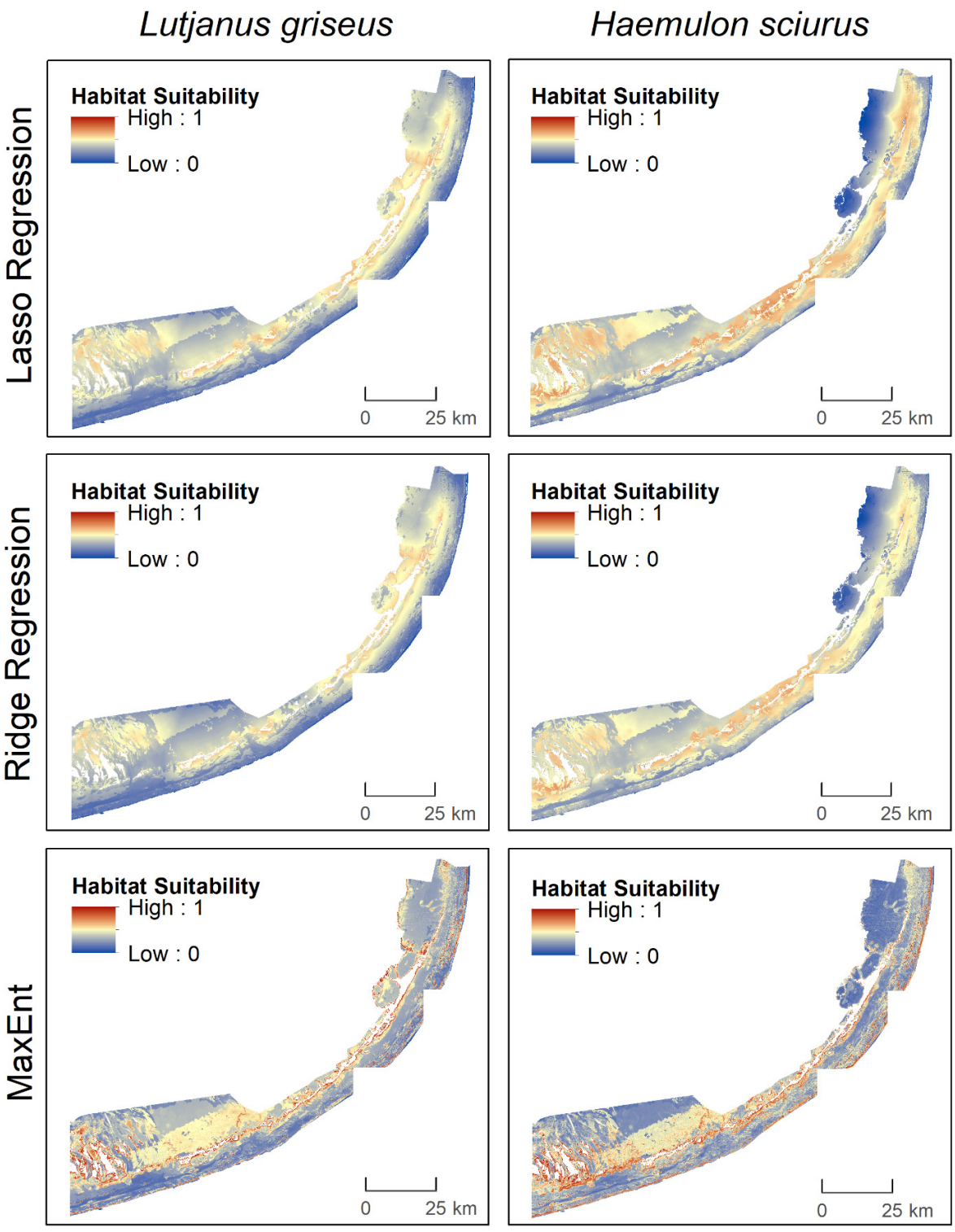
Spatial Predictor	VIF (Full Predictor Set)	VIF (Retained Predictor Set)
Benthic Habitat	1.19	1.16
Distance to Mangrove	1.35	1.29
Depth	2.74	2.63
Depth (Standard Deviation)	688.05	-
Slope	645.26	1.69
Curvature	2.12	1.07
Plan Curvature	2.16	-
Rugosity	4.03	1.43
Broad Scale Bathymetric Position Index	1.75	1.78
Fine Scale Bathymetric Position Index	1.15	1.16
Winter Temperature	2.92	2.20
Winter Salinity	8.15	2.46
Winter Dissolved Oxygen	3.15	-
Summer Temperature	1.86	1.79
Summer Salinity	2.08	1.70
Summer Dissolved Oxygen	6.32	-



Supplementary Figure S1. Pearson pairwise correlation matrix of all available spatial predictors. A correlation threshold of |0.7| was used in concert with a VIF threshold of 5 to remove collinear variables (see Supplementary Table 1). Abbreviations as follows: Dist = Distance, St_Dev = Standard Deviation, Curve = Curvature, BPI = Bathymetric Position Index, Sum = Summer, Win = Winter, Temp = Temperature, Sal = Salinity, DO = Dissolved Oxygen.

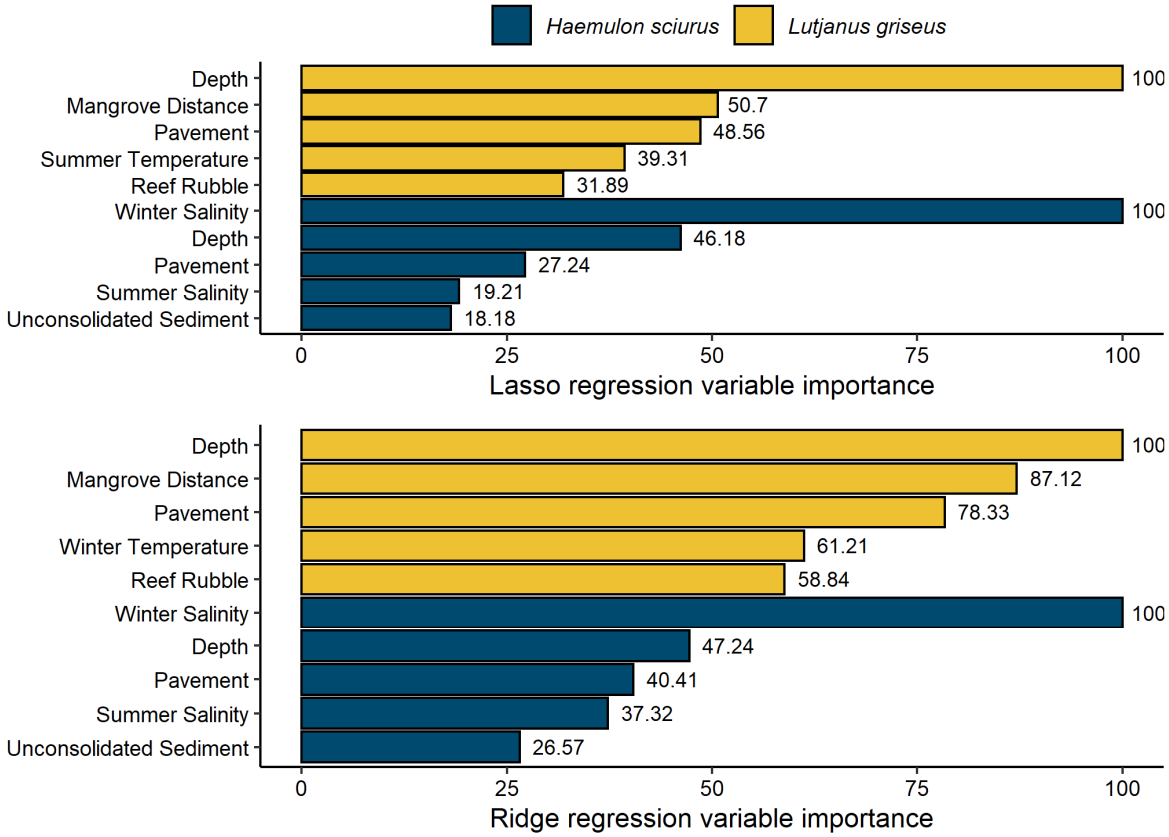


Supplementary Figure S2. Pearson pairwise correlation matrix of spatial predictors retained for habitat suitability modeling. A correlation threshold of |0.7| was used in concert with a VIF threshold of 5 to remove collinear variables (see Supplementary Table 1). Abbreviations as follows: Dist = Distance, BPI = Bathymetric Position Index, Sum = Summer, Win = Winter, Temp = Temperature, Sal = Salinity.

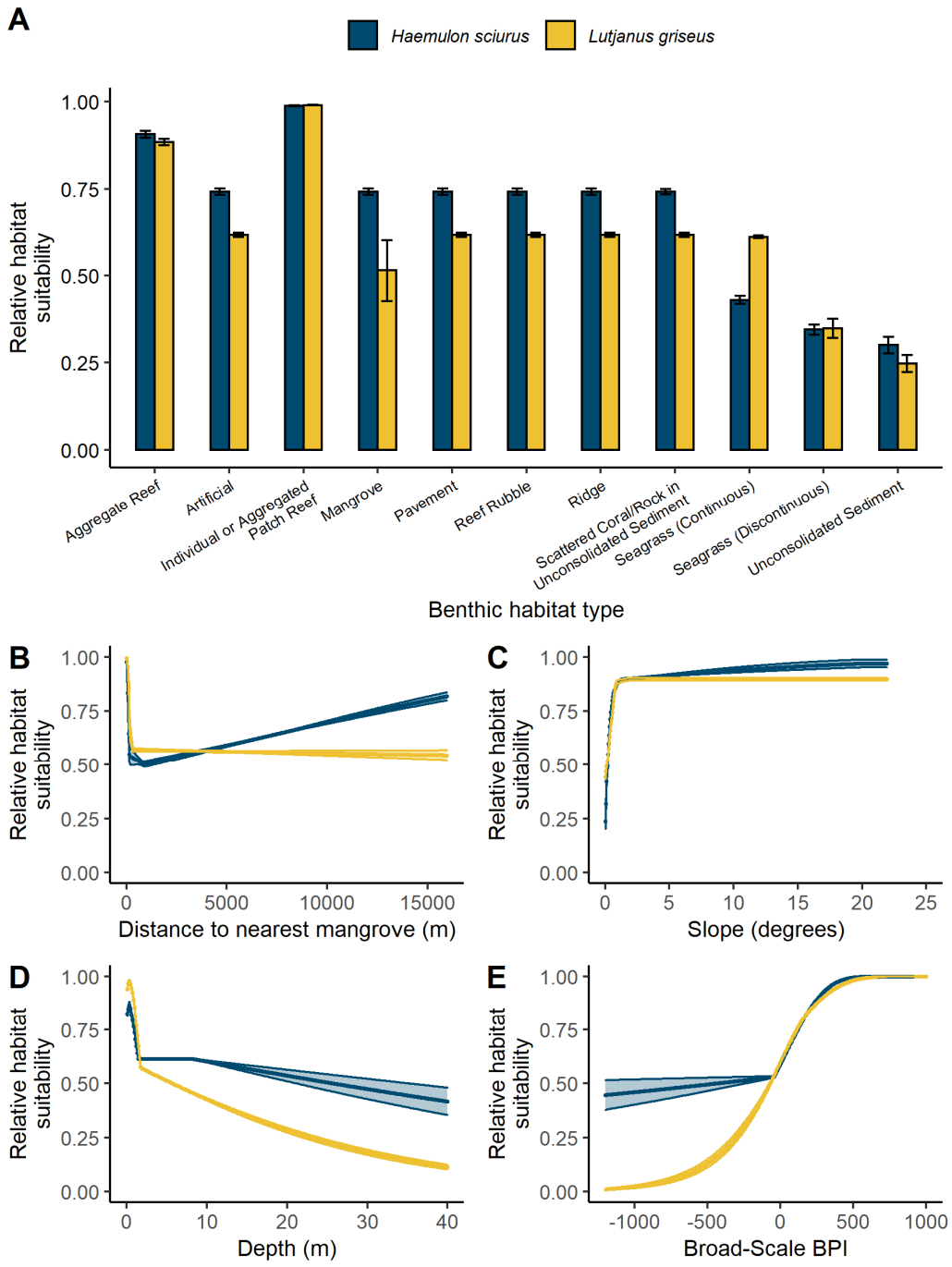


Supplementary Figure S3. Lasso-penalized logistic regression, ridge-penalized logistic regression, and MaxEnt predictions of habitat suitability for sub-adult gray snapper (*Lutjanus*

griseus) and bluestriped grunt (*Haemulon sciurus*) in the Florida Keys, United States of America (USA).



Supplementary Figure S4. Plots of the top five most influential predictors of sub-adult gray snapper (*Lutjanus griseus*) and bluestriped grunt (*Haemulon sciurus*) suitability according to lasso- and ridge-penalized logistic regressions. Variable importance (scaled 0 to 100) was quantified by ranking each spatial predictor by the magnitude of their standardized coefficients.



Supplementary Figure S5. MaxEnt response curves displaying the relationship between predicted relative habitat suitability for sub-adult gray snapper (*Lutjanus griseus*) and bluestriped grunt (*Haemulon sciurus*) and the values of the five most influential predictors: (A) benthic habitat type, (B) Euclidean distance to the nearest mangrove, (C) slope, (D) depth, and (E) broad-scale bathymetric position index (BPI). Each curve represents a different MaxEnt model created using only the corresponding variable, displayed as the mean ± one standard deviation calculated over 10 cross-validation folds.