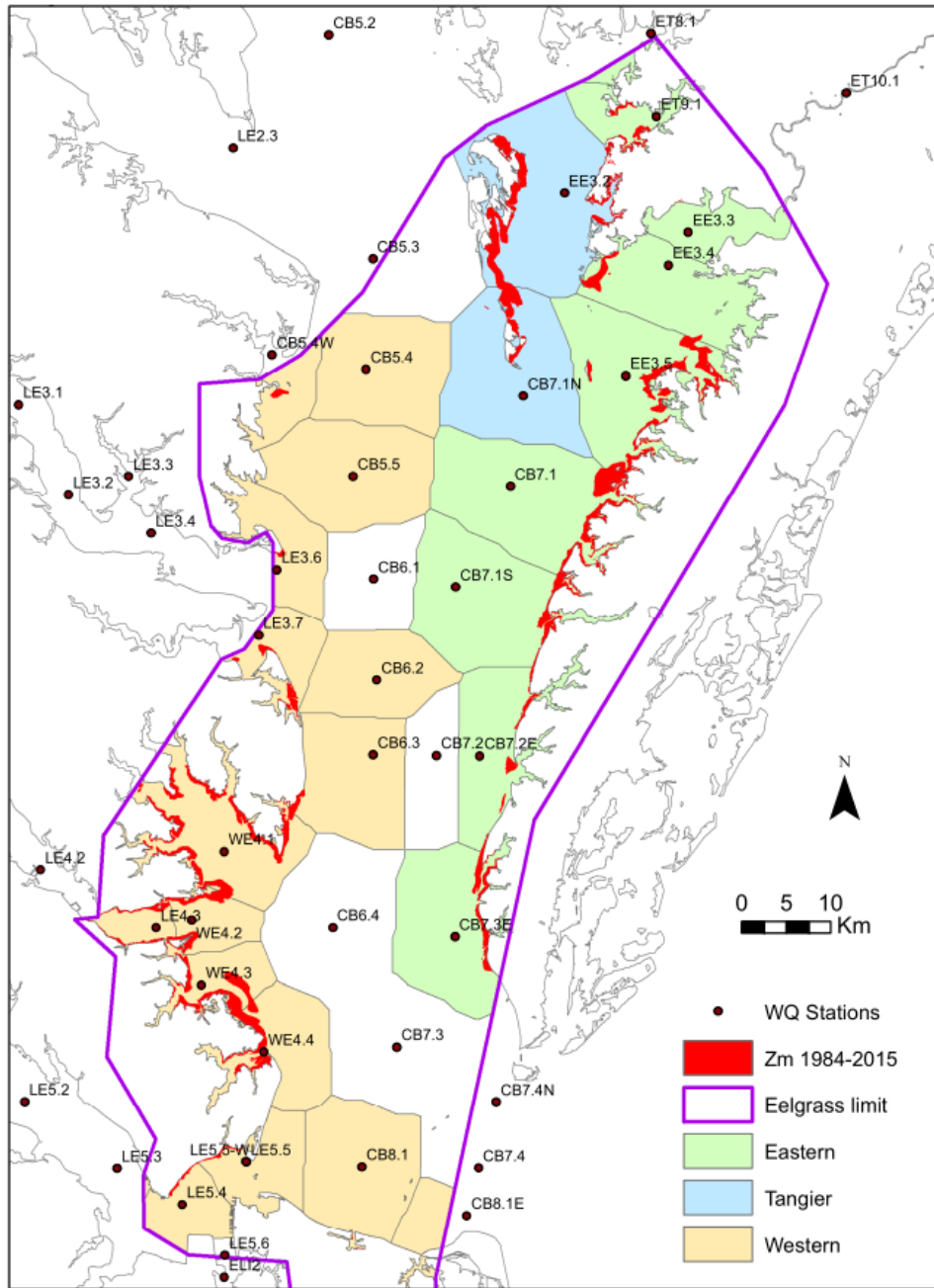
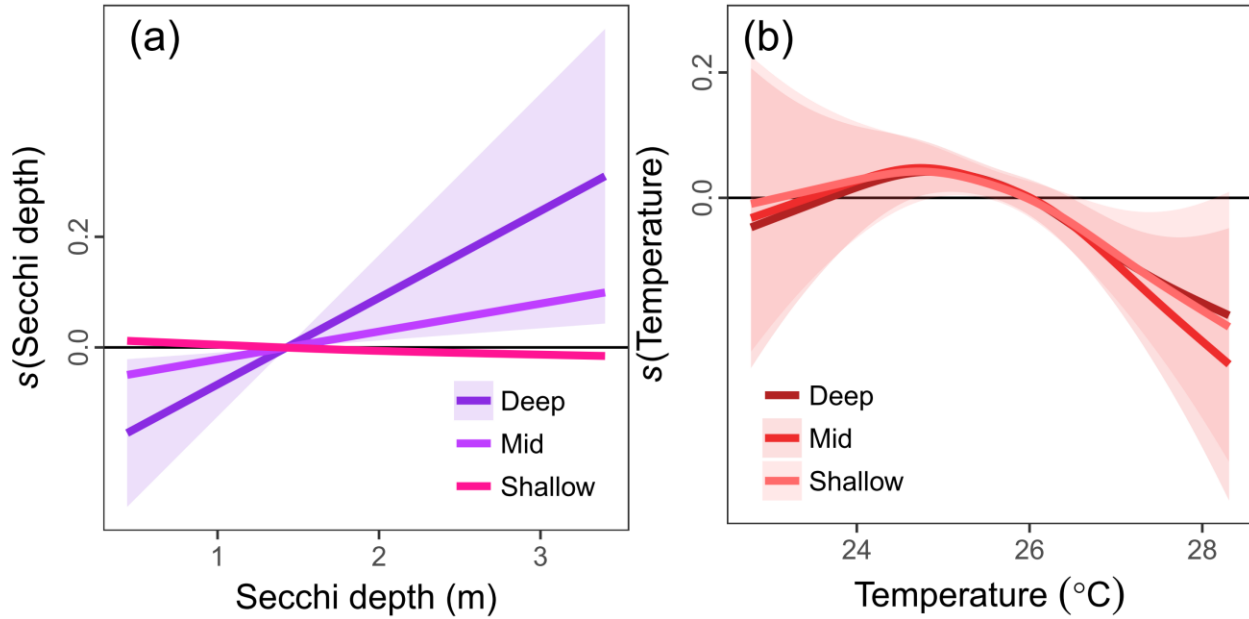


1 **Supplementary Figures**



2

3 **Figure S1. The locations of eelgrass beds (red) and water quality monitoring stations (black**  
4 **dots) used in the analysis.** Individual shaded polygons represent subregions used in the analysis.  
5 Shading indicates the larger regions of the Chesapeake Bay used as a random effect (Eastern Shore,  
6 Western Shore, Tangiers Island).



7

8 **Figure S2. Significant predictors of eelgrass cover for multiple depth strata.** Values are  
 9 predicted fits from generalized linear mixed effects models. Shaded areas depict 95% confidence  
 10 intervals, and are only shown for the significant predictors ( $P < 0.05$ ). Deep =  $>0.5$  m, Mid = 0-0.5 m,  
 11 Shallow = 0 m Mean Low Water. **(a)** Only the deepest beds ( $>0.5$  m) had a significant relationship  
 12 with Secchi depth. **(b)** The intermediate and shallow beds (0-0.5 m) had a significant relationship  
 13 with mean water temperature of the preceding summer.

14 **Supplementary Materials**

15 **Lefcheck\_2017\_GCB\_Analysis.R** – an R script used to exactly reproduce the analysis contained in  
 16 the main text and supplements.

17 **EvaluateSmooths.R** – Supplementary R function called by *Lefcheck\_2017\_GCB\_Analysis.R*.

18 **Lefcheck\_2017\_GCB\_Eelgrass\_Area.csv** – A data file containing the total seagrass area (in  
 19 hectares) for each ‘subregion’ in each year.

Column	Units	Description	Notes
Station		Chesapeake Bap Program sampling station whose water quality data was used in the analysis, or the ‘subregion’	
Year	1984- 2013	The year of the observation	
Region		Main area of the Bay	
CBSEG_2003		Chesapeake Bay Program segment	Not considered in the analysis
LATITUDE		Latitude of the station (in decimal degrees)	
LONGITUDE		Longitude of the station (in decimal degrees)	
UTM_X		UTM Zone 18N X-coordinate of the station (in meters)	
UTM_Y		UTM Zone 18N Y-coordinate (in meters)	

SAVDen	Hectares	Density of <i>Zostera marina</i> in the current year	Calculated as the sum of the area occupied by <i>Z. marina</i> multiplied by the density bin for each 30 m grid cell
SAVDen_Prev	Hectares	Density of <i>Zostera marina</i> in the previous year	
SAVHabitat	Hectares	Total bottom area $\leq 1$ m available for colonization by <i>Z. marina</i>	
Depth	Meters	Average depth of the <i>Z. marina</i> in the subregion at Mean Low Water	
DistShore	Meters	Average distance to the shoreline of the <i>Z. marina</i> in the subregion	
DistWQ	Meters	Average distance to the Chesapeake Bay Program water quality monitoring station of the <i>Z. marina</i> in the subregion	

20

21 **Lefcheck\_2017\_GCB\_Eelgrass\_Strata\_Area.csv** – A data file containing the total seagrass area (in  
 22 hectares) for each ‘subregion’ in each year parsed by depth strata (shallow, mid, deep).

Column	Units	Description	Notes
Station		Chesapeake Bay Program sampling station whose water quality data was used in the analysis, or the ‘subregion’	

Year	1984- 2013	The year of the observation	
DepthReg		Depth zone. Deep = >0.5 m; Mid = 0-5 m; Shallow = 0 m Mean Low Water.	
SAVDen	Hectares	Density of <i>Zostera marina</i> in the current year	Calculated as the sum of the area occupied by <i>Z. marina</i> multiplied by the density bin for each 30 m grid cell
SAVDen_Prev	Hectares	Density of <i>Zostera marina</i> in the previous year	

23

24 **Lefcheck\_2017\_GCB\_Env.csv** – A data file containing the environmental parameters from the  
 25 Chesapeake Bay Program water quality monitoring stations in each year.

Column	Units	Description	Notes
DATE	m/D/Y	Date that the water quality sample was taken.	
STATION		Chesapeake Bay Program sampling station where the water quality data was taken, or the 'subregion'	

DEPTH	Meters	Depth of the water quality measurement	
PARAMETER	CHLA = chlorophyll- <i>a</i> ; SALINITY = salinity; SECCHI = Secchi depth; TN = total water column nitrogen; TP = total water column phosphorus; TSS = total suspended solids; WTEMP = water temperature	The water quality parameter measured.	TSS was not used in the analysis due to evidence of methodological errors during sampling
VALUE		Value of the water quality parameter.	
UNIT	DEG C = degrees Celsius; M = meters; MG/L = milligrams per liter; PPT = parts per thousand; UG/L = micrograms per liter	Units of the water quality parameter.	
METHOD		Methodological designation by the processing lab.	
LAB		Lab group responsible for processing.	
SOURCE		Agency responsible for data processing.	

LAT		Latitude of the station (in decimal degrees)	
LONG		Longitude of the station (in decimal degrees)	

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