

Analysis of optimal habitat for captive release of the sea cucumber *Holothuria scabra*

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Table S1. Parameter estimates optimized to yield the maximum growth, survival and burial rates. Optimization performed on each GBM bootstrap to obtain upper and lower confidence limits (95% quantiles). Statistically significant predictors (i.e., disproportionately represented in trees) are in bold text. Maximum survival rate at optimization estimated to be 0.97 day⁻¹ (0.99, 1.11), maximum growth rate 0.07 g day⁻¹ ind⁻¹ (0.07, 0.12) and maximum burial rate 67.8% (67.8, 80.7).

Response variable	Predictor variables	Optimal parameters			R^2		
		Mean	Lower	Upper	Mean	Lower	Upper
Survival	Weight at release (g)	3.3	3.1	3.5	0.04	0	0.21
	Seagrass cover (%)	42	20	69	0.08	0	0.38
	Organic C content (%)	1.6	0.7	2.2	0.04	0	0.20
	Grain size (µm)	189	55	415	0.02	0	0.12
	Crude organic matter (%)	7.6	4.1	10.5	0.01	0	0.11
	Depth (m)	1.1	0.1	2.9	0.09	0	0.43
	Penetrability (cm)	9	2	14	0.03	0	0.17
	Macroalgae cover (%)	7.7	0	26.5	0.01	0	0.09
	Organic N content (%)	0.1	0.1	0.2	0.01	0	0.09
	Shellfish abundance (No.)	2.2	0.3	4.8	0	0	0.03
	Rock/rubble cover (%)	7.6	0.2	18.1	0.02	0	0.30
	Sessile invert. cover (%)	2.6	0.1	3.1	0	0	0.01
Growth	Weight at release (g)	3.2	3.0	3.3	0.12	0	0.39
	Seagrass cover (%)	34	16	48	0.06	0	0.38
	Organic C content (%)	1.3	1.0	1.9	0.04	0	0.33
	Grain size (µm)	135	82	273	0.06	0	0.20
	Crude organic matter (%)	6.9	4.0	9.9	0.05	0	0.21
	Depth (m)	0.8	0.1	2.9	0.04	0	0.16
	Penetrability (cm)	9	3	11	0.05	0	0.26
	Macroalgae cover (%)	1.7	0	19.6	0.03	0	0.16
	Organic N content (%)	0.2	0.1	0.2	0.02	0	0.08
	Shellfish abundance (No.)	1.1	0.3	4.3	0.01	0	0.07
	Rock/rubble cover (%)	5.8	0.2	21.2	0.02	0	0.16
	Sessile invert. cover (%)	1.3	0.1	3.0	0.02	0	0.16

Response variable	Predictor variables	Optimal parameters			R^2		
		Mean	Lower	Upper	Mean	Lower	Upper
Burial	Weight at release (g)	3.3	3.1	3.5	0.05	0	0.19
	Seagrass cover (%)	52	3	75	0.06	0	0.22
	Organic C content (%)	1.9	1.3	2.2	0.23	0.03	0.47
	Grain size (μm)	152	86	321	0.06	0	0.26
	Crude organic matter (%)	7.5	3.8	10.6	0.04	0	0.18
	Depth (m)	0.3	0.1	0.8	0.16	0.01	0.42
	Penetrability (cm)	10	6	13	0.03	0	0.12
	Macroalgae cover (%)	2.3	0	31.9	0.08	0	0.48
	Organic N content (%)	0.2	0.1	0.2	0.08	0	0.33
	Shellfish abundance (No.)	2.0	0.3	4.8	0.01	0	0.07
	Rock/rubble cover (%)	3.6	0.2	21.2	0.01	0	0.13
	Sessile invert. cover (%)	2.4	0.1	3.4	0	0	0.03

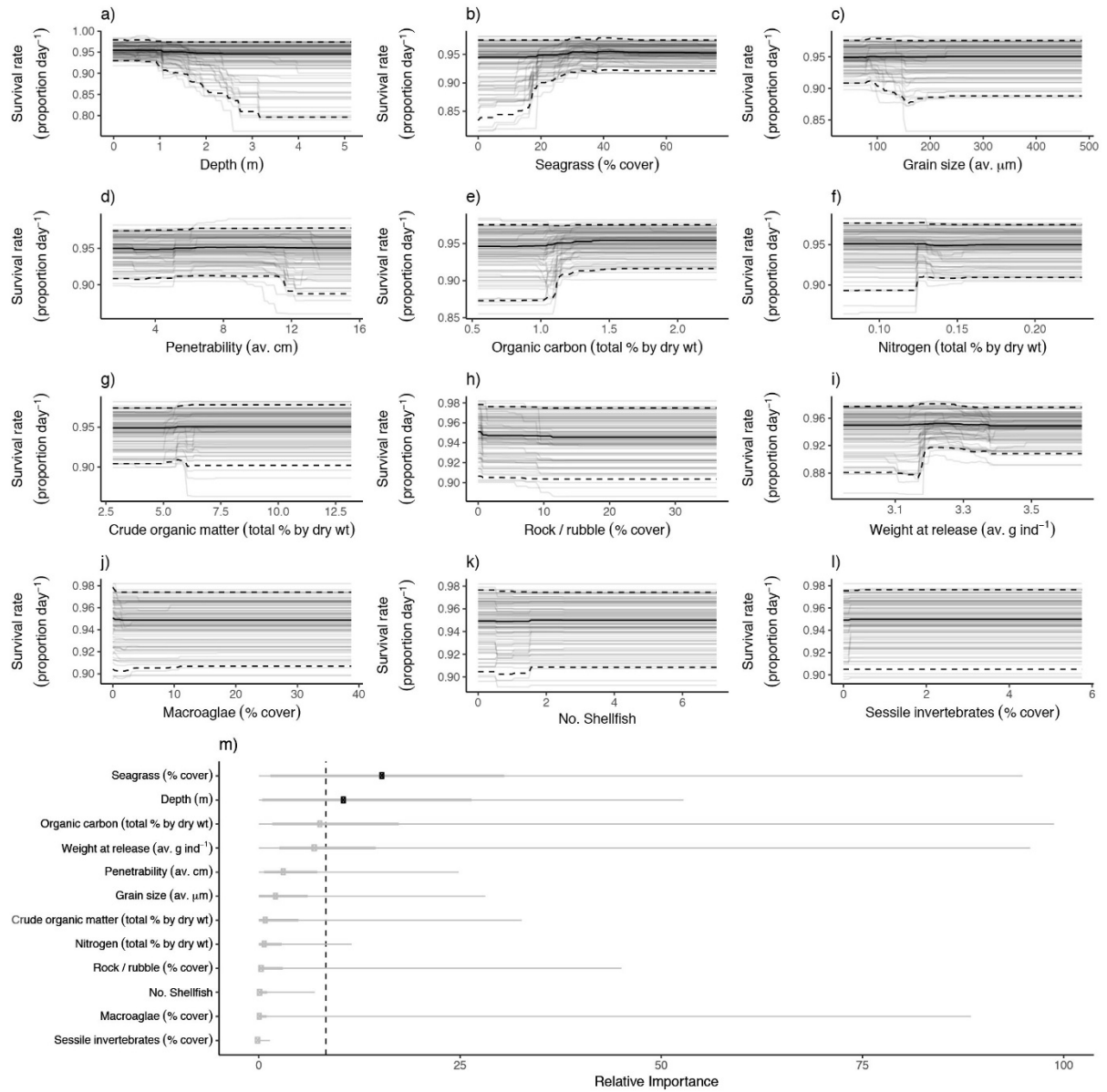


Figure S1. Bootstrap boosted regression tree partial effects plots relating to survival rate against each of the predictor variables (a-l) and associated relative importance plot (m). On partial effects plots, solid and dashed lines represent median and lower/upper 95% quantiles, respectively. On relative importance plot, dots represent medians and thick and thin bars represent 50% and 95% quantiles, respectively. The vertical dashed line represents the threshold (100/12) above which predictors are disproportionately represented in trees and dots and bars are shaded according to whether they exceed this threshold (black) or not (grey).

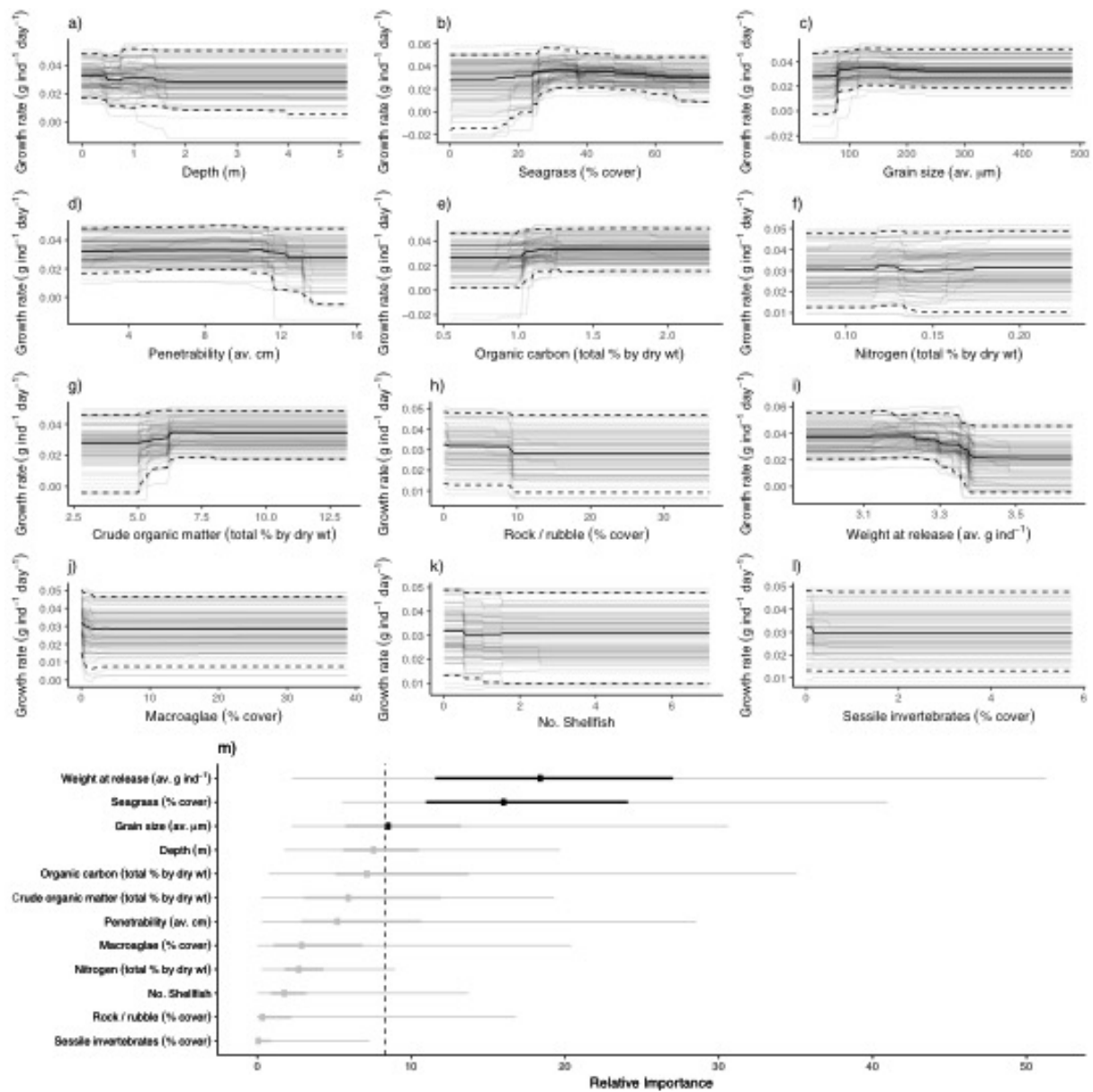


Figure S2. Bootstrap boosted regression tree partial effects plots relating to growth rate against each of the predictor variables (a-l) and associated relative importance plot (m). On partial effects plots, solid and dashed lines represent median and lower/upper 95% quantiles, respectively. On relative importance plot, dots represent medians and thick and thin bars represent 50% and 95% quantiles, respectively. The vertical dashed line represents the threshold (100/12) above which predictors are disproportionately represented in trees and dots and bars are shaded according to whether they exceed this threshold (black) or not (grey).

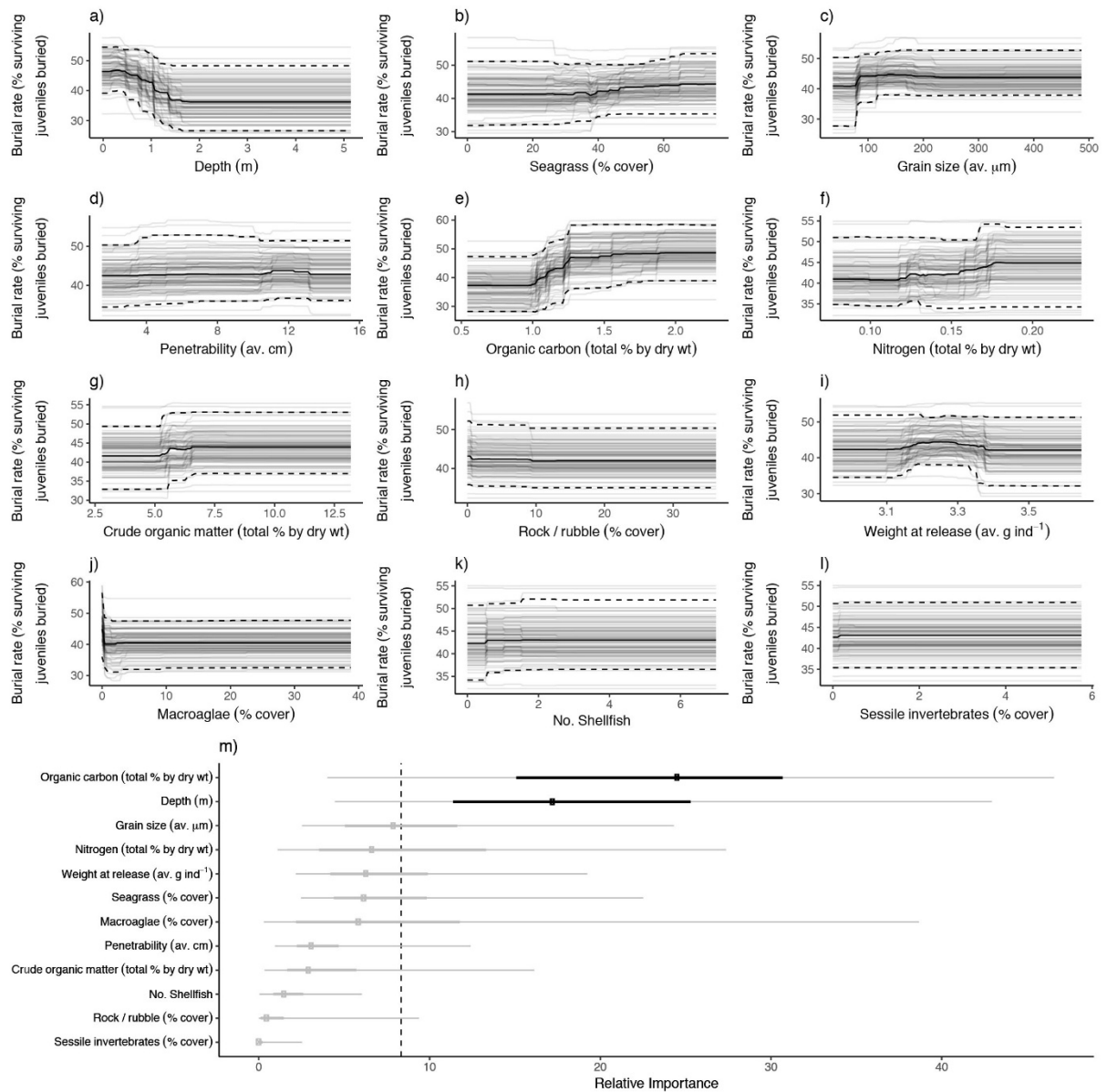


Figure S3. Bootstrap boosted regression tree partial effects plots relating to burial rate against each of the predictor variables (a-l) and associated relative importance plot (m). On partial effects plots, solid and dashed lines represent median and lower/upper 95% quantiles, respectively. On relative importance plot, dots represent medians and thick and thin bars represent 50% and 95% quantiles, respectively. The vertical dashed line represents the threshold (100/12) above which predictors are disproportionately represented in trees and dots and bars are shaded according to whether they exceed this threshold (black) or not (grey).