Supplemental Table 1. Summary of results on the distance-based linear model (DistLM) examining the percentage of variance accounted for each biological variable (*T. gratilla* phenotypic traits, repletion index), and determining the relationships among the biological variables with respect to different stations in three locations and three seasons. Proportion of variance in phenotypic traits/ biological variables explained by predictor variable(s) in stepwise sequential tests following AICc (Akaike Information Selection Criterion corrected). GQlty=Gonad Quality, TI=Test or body wall index, GSI=Gonad index, ALI=Aristotle's lantern index, GI=Gut index, RI=Repletion index. Prop. is the proportion of variance explained by each single variable; Cumul. is the cumulative proportion of variance explained by multiple variables; res.df=residual degrees of freedom.

MARGINAL TESTS: % of variance accounted for each variable

Variable	SS(trace)	Pseudo-F	P	Prop.
TI	2133.0	75.34	0.001	0.3669
GSI	2065.0	71.62	0.001	0.3552
ALI	2206.6	79.53	0.001	0.3796
GI	2035.7	70.05	0.001	0.3502
RI	1892.3	62.73	0.001	0.3255
GQlty	991.6	26.74	0.001	0.1706

SEQUENTIAL TESTS: % of variance accounted for each variable

Variable	AICc	SS(trace)	Pseudo-F	P	Prop.	Cumul. (R^2)	res.df
+ALI	440.73	2206.6	79.53	**0.001**	**0.3796**	**0.3796**	130
+RI	352.04	719.6	51.62	**0.001**	**0.3135**	**0.6931**	128
+GI	286.84	713.2	84.57	**0.001**	**0.2109**	**0.9039**	127
+GSI	-34.897	468.11	646.44	**0.001**	**0.0805**	**0.9844**	125
+GQlty	-Infinity	110.04	-698.87	**1.000**	0.0189	**1.003**	124

Supplemental Table 1 (continued…)

SEQUENTIAL TESTS: Predictor variables for GONAD INDEX (GSI)

Variable	AICc	SS(trace)	Pseudo-F	P	Prop.	Cumul. (R^2)	res.df
+ALI	379.77	950.24	**54.35**	**0.001**	**0.2948**	0.2948	130

SEQUENTIAL TESTS: Predictor variables for GUT INDEX

Variable	AICc	SS(trace)	Pseudo-F	P	Prop.	Cumul. (R^2)	res.df
+ALI	248.11	127.16	**846.24**	**0.001**	**0.8668**	0.8668	130
+RI	254.14	1.17	8.19	**0.007**	0.0079	0.8748	129

SEQUENTIAL TESTS: Predictor variables for ARISTOTLE's LANTERN INDEX (ALI)

Variable	AICc	SS(trace)	Pseudo-F	P	Prop.	Cumul. (R^2)	res.df
+GI	12.826	967.19	**891.55**	**0.001**	**0.8727**	0.8727	130
+RI	7.2217	21.78	23.56	**0.001**	0.0197	**0.8924**	129

SEQUENTIAL TESTS: Predictor variables for REPLETION INDEX: RI = Gut+content wt.: BW ratio

Variable	AICc	SS(trace)	Pseudo-F	P	Prop.	Cumul. (R^2)	res.df
+ALI	410.46	1607.30	**72.86**	**0.001**	**0.3592**	0.3592	130
+GI	402.91	202.02	9.78	**0.003**	0.0451	**0.4043**	129

Percentage of variation explained by individual axes based from DistLM and dbRDA analyses

	% explained variation out of fitted model		% explained variation out of total variation	
Axis	Individual	Cumulative	Individual	Cumulative
1	**70.36**	**70.36**	**70.57**	**70.57**
2	12.62	82.99	12.66	83.23
3	8.42	91.4	8.44	91.67
4	4.93	96.34	4.95	96.62
5	2.39	98.72	2.4	99.01
6	1.05	99.77	1.05	100.06
7	0.23	**100**	0.23	**100.29**

Supplemental Table 2. Distance-based linear model (DistLM) examining the percentage of variance accounted for each biological seagrass and environmental variables (diffusion factor (DF), sea surface temperature (SST), mean site depth, seagrass abundance measures such as shoot density (shootden), leaf production (leafprodn), and fresh or dry weight seagrass biomass (FW, DW biomass) in three locations and three seasons. Proportion of variance in biological variables explained by predictor variable(s) in stepwise sequential tests following AICc (Akaike Information Selection Criterion corrected). Prop. is the proportion of variance explained by each single variable; Cumul. is the cumulative proportion of variance explained by multiple variables; res.df=residual degrees of freedom.

ENVIRONMENTAL VARIABLES

1. SST
2. DF
3. Depth
4. shoot density
5. leaf production
6. FW biomass
7. DW biomass

MARGINAL TESTS

Variable	SS(trace)	Pseudo-F	P	Prop.
SST	905.9	24.00	**0.0002**	0.1558
DF	1086.1	29.87	**0.0002**	0.1868
Depth	110.65	2.52	0.0584	0.0190
Shootden	1245	35.43	**0.0002**	0.2142
LeafProd	433.56	10.48	**0.0002**	0.0746
FW biomass	152.27	3.50	**0.0200**	2.62E-02
DW biomass	101.86	2.32	0.0734	1.75E-02

SEQUENTIAL TESTS

Variable	AICc	SS(trace)	Pseudo-F	P	Prop.	Cumul.	res.df
+shootden	471.92	1245.00	35.425	**0.0002**	**0.21415**	0.2142	130
+SST	464.99	302.17	9.136	**0.0002**	5.20E-02	0.2661	129
+leafprodn	462	162.17	5.058	**0.0028**	2.79E-02	0.2940	128
+DF	457.9	190.20	6.172	**0.0004**	3.27E-02	**0.3267**	127

Supplemental Table 2 (continued…)

ENVIRONMENTAL VARIABLES

1. SST
2. DF
3. Depth
4. shoot density
5. leaf production
6. FW biomass
7. DW biomass

MARGINAL TESTS

Variable	SS(trace)	Pseudo-F	P	Prop.
SST	905.9	24.00	**0.0002**	0.1558
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Supplemental Table 3. Proximate analysis of macrophyte food for *T. gratilla* and its gonads.

	Source	Protein (g/100g)	Fat (g/100g)	Ash (g/100g)	Moisture (g/100g)	CHO (g/100g)	TOTAL (g/100)	CAL (kCal/100g)
Thalassia hemprichii shoots								
1	western stations	11.8	0.1	24.7	14.4	49.0	100	244.1
2	eastern station Pilar	11.7	0.5	24.5	15.3	48.0	100	243.3
*Syringodium isoetyfolium** shoots								
1	western stations	7.4	0.4	44.1	11.9	36.2	100	178.0
Sargassum spp. fronds								
1	NEast monsoon season	5.6	0.1	31.8	25.1	37.4	100	172.9
2	Summer season	4.2	0.1	43.2	13.2	39.3	100	174.9
Gracilaria edulis filaments								
1	NEast monsoon/ cold season	3.9	0.5	38.0	14.1	43.5	100	194.1
2	Summer season	5.7	0.4	52.8	10.0	31.1	100	150.8
Tripneustes gratilla gonads**								
1	western stations	7.7	3.7	2.7	83.3	2.6	100	74.5
2	Eastern stations Victory	7.2	4.3	2.4	82.6	3.5	100	81.5

* Limited shoots; none in majority of sites; ** samples from the eastern stations Pilar not analyzed by PIPAC (Ateneo de Manila) due to limited volume