SUPPLEMENTARY INFORMATION

Seagrass structural and elemental indicators reveal high nutrient availability within a tropical lagoon in Panama.

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Table S1. Sampling sites across the Bahía Almirante, used to survey the benthic community cover and the nutrient content of *Thalassia testudinum*.

Site ID	Depth (m)	Latitude	Longitude
1	3.6	9° 24.049'N	82° 19.275'W
2	1	9° 22.388'N	82° 17.709'W
3	1.2	9° 20.951'N	82° 15.722'W
4	5.8	9° 21.104'N	82° 15.513'W
5	1.8	9° 20.674'N	82° 14.331'W
6	2.7	9° 19.534'N	82° 13.150'W
7	2.7	9° 18.466'N	82° 11.890'W
8	2.7	9° 16.314'N	82° 11.824'W
9	4.6	9° 14.500'N	82° 10.188'W
10 shallow	1.8	9° 14.918'N	82° 13.386'W
10 deep	8.8	9° 14.918'N	82° 13.386'W
11	3.4	9° 13.919'N	82° 15.474'W
12	2.1	9° 16.581'N	82° 14.880'W
13	1.8	9° 16.437'N	82° 17.747'W
14	0.5	9° 14.401'N	82° 17.676'W
15	1	9° 14.526'N	82° 20.626'W
16	2.7	9° 15.480'N	82° 23.038'W
17	5.8	9° 17.424'N	82° 19.426'W
18	1.7	9° 18.335'N	82° 20.829'W
19	1.6	9° 19.493'N	82° 22.247'W
20	3	9° 23.995'N	82° 21.044'W
21 (Stri)	1.4	9°21.144'N	82°15.500W
22 (Popa)	1	9°13.913'N	82°06.883W
23 (Almi)	1.6	9° 17.453'N	82° 20.580'W

Table S2. Benthic community composition (% cover) across sites in Bahia Almirante (n=22).

	% *Thalassia*	% *Syringodium*	% Sand	% Coral	% Soft coral	% Sponge	% Fleshy algae	% Calcareous algae
Mean	51.95	0.24	42.2	0.18	0.19	1.51	0.46	3.44
SE	5.85	0.22	5.24	0.14	0.19	0.61	0.22	1.50
CV	0.53	4.32	0.58	3.73	4.69	1.90	2.25	2.05
Median	52.68	0.00	41.48	0.00	0.00	0.00	0.00	0.00
Minimum	5.20	0.00	8.43	0.00	0.00	0.00	0.00	0.00
Maximum	91.57	4.77	94.80	3.09	4.08	9.64	4.49	26.64

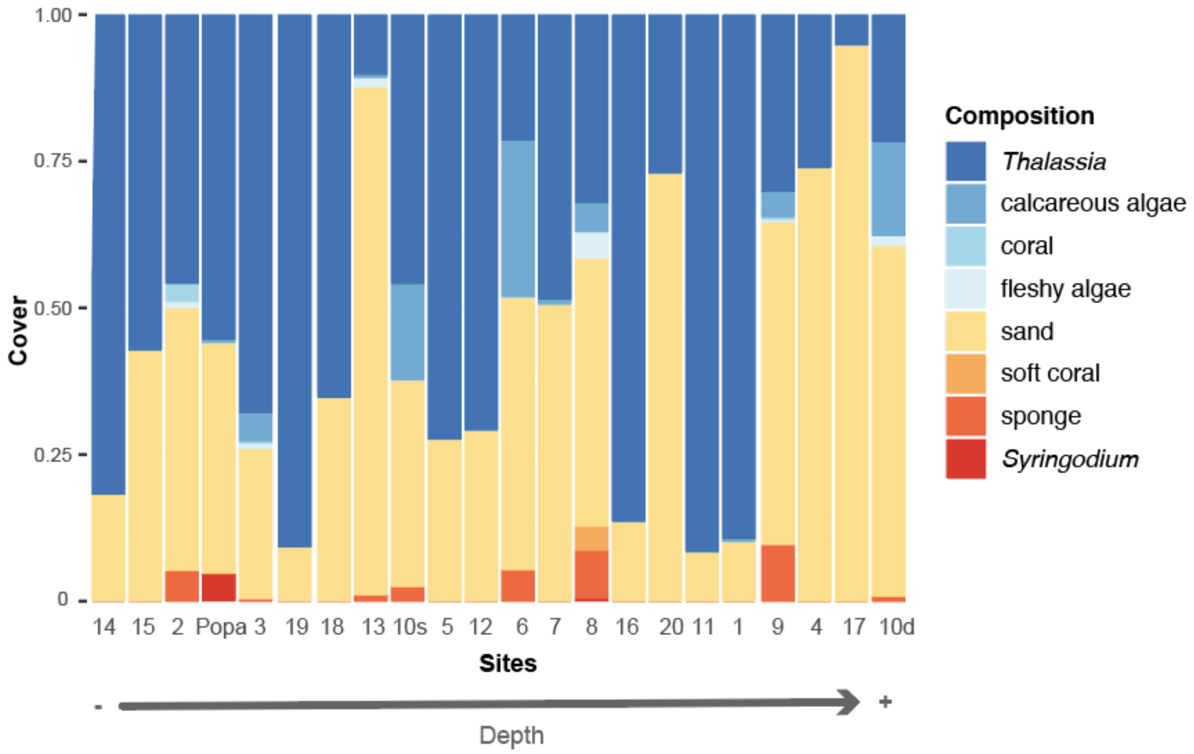


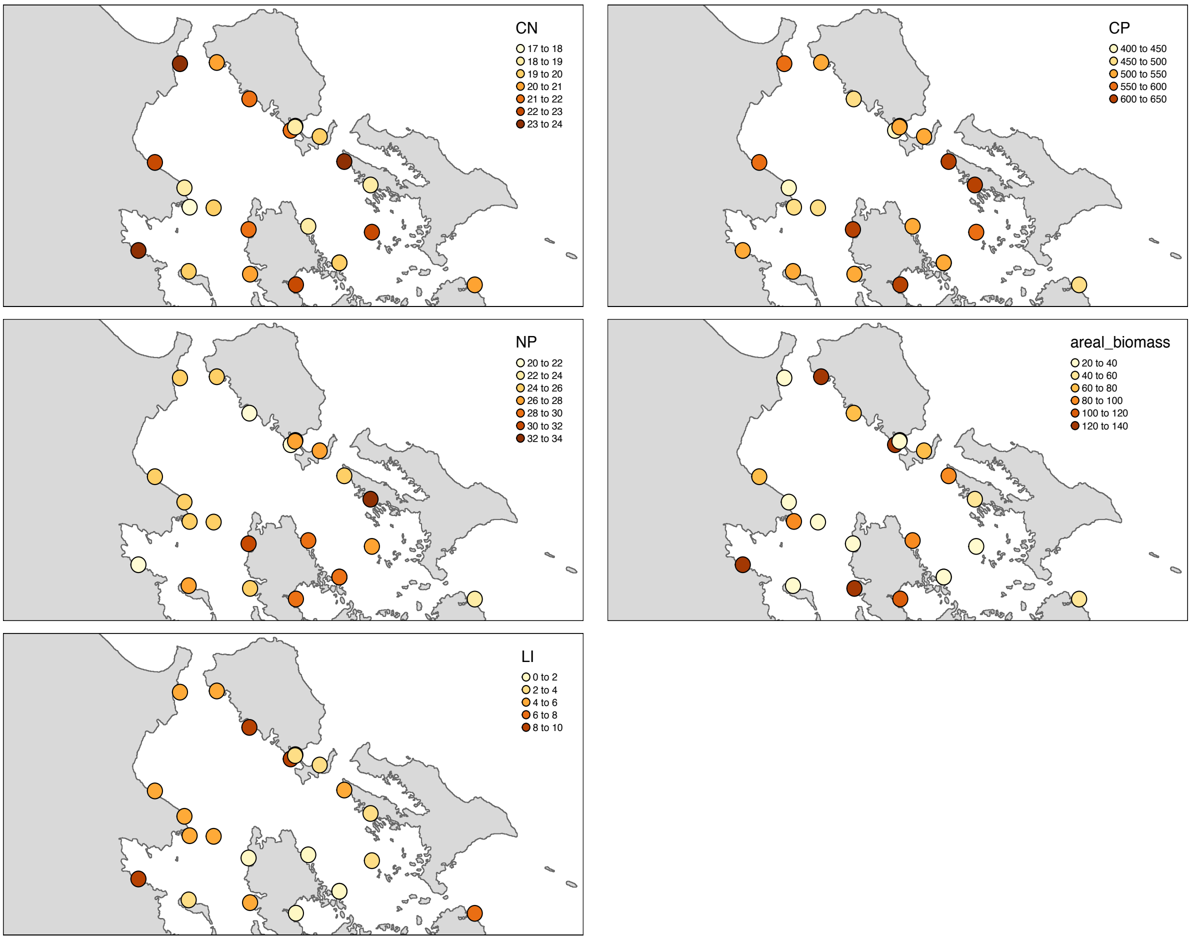
Figure S1. Visual benthic community cover according to sites (from the shallower to the deepest sites).

Table S3. Results of Permanova tests (999 permutations) exploring the effect of different factors on the benthic community cover according to sites.

Response variable	F	Pr(>F)
Latitude	0.67	0.420
Longitude	1.16	0.293
Distance from open ocean	0.55	0.488
Distance from the closest city	0.54	0.510
Depth	3.74	0.070
Management	0.17	0.765
Leaf %N	0.27	0.641
Leaf %C	0.69	0.421
Leaf %P	0.12	0.857

Figure S2. (A) Elemental ratios, biomass and limitation index (LI) values and (B) stable isotope ratios (δ^{13}C and δ^{15}N) values across the Bocas del Toro archipelago.

(A)



(B)

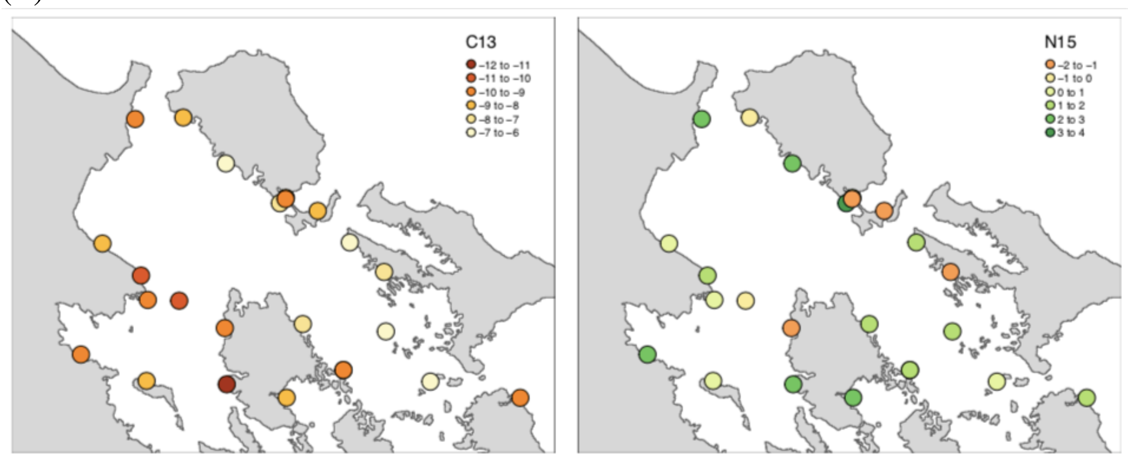


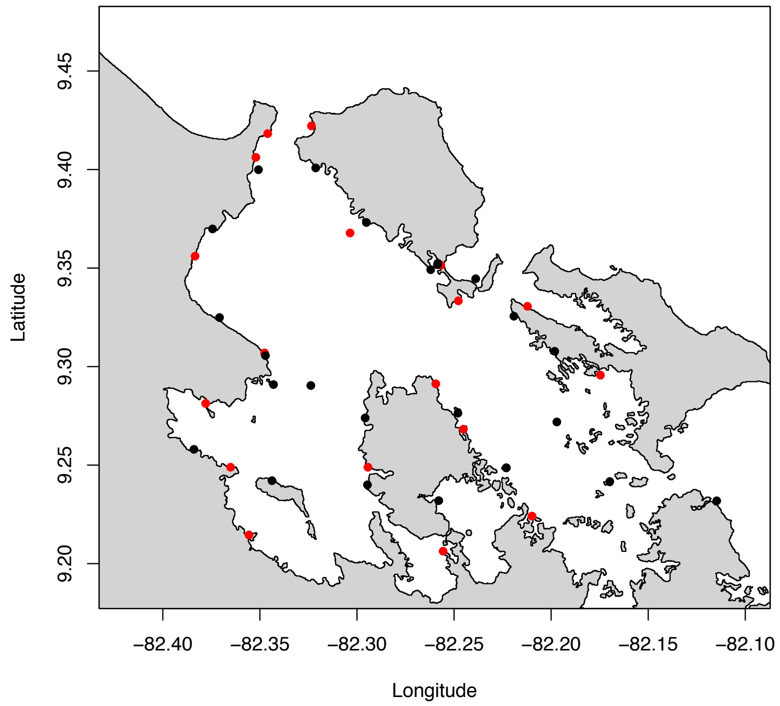
Table S4. Average aboveground biomass of *Thalassia testudinum* at the CARICOMP seagrass monitoring sites per country or territory, summarized from van Tussenbroek *et al.* 2014. The last line (in grey) reports the average aboveground biomass found in Bahía Almirante in this study.

Country/Territory (*number of stations*)	Period of study	Average above-ground biomass of *T. testudinum* (g dry mass m^{-2})
Bermuda *(3)*	1993-2000	9.3
Bahamas *(2)*	1994-2006	51.1
Cuba *(2)*	1994-2002	73.0
Mexico *(5)*	1993-2009	71.5
Cayman Isl. *(2)*	1997-2003	68.8
Jamaica *(2)*	1993-1999	120.7
Dominican R. *(2)*	1996-2001	63.1
Puerto Rico *(2)*	1994-2007	131.9
Belize *(4)*	1993-2012	89.4
Colombia (Isla Providencia and Isla San Andres) *(10)*	1999-2007	61.3
Colombia *(2)*	1994-2005	66.8
Barbados *(2)*	1993-2001	76.8
Curaçao *(2)*	1994-1995	22.9
Tobago *(3)*	1992-2007	77.4
Venezuela *(3)*	1993-2006	154.9
Costa Rica *(2)*	1999-2005	69.1
Panama *(2)*	1999- 2006	77.4
Panama (Bahia Almirante, *24*)	2015	71.68

Table S5. References associated with Figure 8, reviewing *T. testudinum* mean leaf %N and %P values according to different regions in the Caribbean. The number of sites associated with each mean value reported is indicated.

Country	Ref	Authors	Number of sites
Bahamas	1	Capone *et al.* 1979	2
Bahamas	2	Moran & Bjorndal 2007	1
Bahamas	3	Jensen *et al.* 1998	3
Bahamas	4	Allgeier *et al.* 2011	3
Barbados	5	Patriquin 1972	2
Belize	6	Campbell *et al.* 2017	1
Bermuda	7	Mcglathery *et al.* 1994	2
Bermuda	8	Fourqurean *et al.* 2015	516
Bonaire	9	Govers *et al.* 2014a	1
Costa Rica	10	Krupp *et al.* 2009	5
Curacao	9	Govers *et al.* 2014a	4
Jamaica	11	Peterson *et al.* 2012	2
Mexico (Caribbean coast)	12	Gallegos *et al.* 1993	3
Mexico (Caribbean coast)	13	Hernández & Tussenbroek 2014	2
Mexico (Caribbean coast)	14	Carruthers *et al.* 2005a	18
Mexico (Caribbean coast)	15	Van Tussenbroek *et al.* 1996	1
Mexico (Caribbean coast)	16	Mutchler *et al.* 2007	2
Mexico (Caribbean coast)	17	Pérez-gómez *et al.* 2020	3
Panama	18	Carruthers *et al.* 2005b	18
Panama	18	Carruthers *et al.* 2005b	9
Panama	18	Carruthers *et al.* 2005b	5
Panama	6	Campbell *et al.* 2017	1
Panama	19	Present study	24
Puerto Rico	20	Olsen & Valiela 2010	1
Florida Keys	21	Fourqurean & Zieman 2002	504
Florida Keys	6	Campbell *et al.* 2017	1
Florida Bay	22	Armitage *et al.* 2011	6
Florida Bay	23	Kenworthy & Thayer 1984	1
Florida Bay	24	Powell *et al.* 1989	1
Florida Bay	25	Rublee & Roman 1982	1
Florida Bay	26	Fourqurean & Cai 2001	31
Florida Bay	27	Fourqurean *et al.* 1992a	50
Florida Bay	28	Campbell *et al.* 2012	1

Figure S3. Map of Bahía Almirante showing the seagrass sites used in this study (in black) and in the study of Carruthers *et al.* (2005 ; in red).



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