

‘Blue Carbon’ and Nutrient Stocks of Salt Marshes at a Temperate Coastal Lagoon (Ria de Aveiro, Portugal)

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Supplementary Table S1

Plant species		Site	Month	OM (%)	pH	Temperature (°C)	Particle size (mean, %)			
							<63 μm	<125 μm	<250 μm	>250 μm < 1000 μm
<i>Juncus maritimus</i>		1	Feb	18.7 \pm 4.2	6.36 \pm 0.1	13.3 \pm 0.3	60.9	16.1	22.9	0.1
			Apr	19.9 \pm 8.1	6.03 \pm 0.1	13.3 \pm 0.1	50.1	27.3	22.3	0.4
			Jun	17.3 \pm 1.5	6.33 \pm 0.5	22.0 \pm 0.0	61.1	18.1	20.6	0.2
			Aug	15.2 \pm 3.0	6.51 \pm 0.0	21.9 \pm 0.1	54.1	28.1	17.8	0.0
			Oct	14.7 \pm 2.2	6.69 \pm 0.2	16.1 \pm 1.0	58.5	14.2	27.1	0.2
			Dec	16.0 \pm 2.8	6.95 \pm 0.2	7.5 \pm 0.4	56.9	20.8	22.1	0.0
		2	Feb	28.2 \pm 2.4	5.95 \pm 0.5	11.9 \pm 0.0	42.5	27.0	29.3	1.2
			Apr	21.5 \pm 2.7	5.86 \pm 0.0	12.4 \pm 0.1	55.9	22.1	21.9	0.2
			Jun	22.4 \pm 1.4	6.20 \pm 0.3	18.4 \pm 0.1	55.5	19.5	23.8	1.2
			Aug	21.7 \pm 4.4	6.14 \pm 0.2	20.1 \pm 0.1	49.6	23.9	25.7	0.8
			Oct	17.8 \pm 0.7	6.90 \pm 0.1	14.4 \pm 0.6	54.7	19.5	25.5	0.3
			Dec	20.4 \pm 1.3	6.79 \pm 0.3	8.7 \pm 1.5	51.6	22.4	25.2	0.0
		3	Feb	19.3 \pm 4.9	6.25 \pm 0.2	13.1 \pm 0.1	49.8	23.8	25.9	0.4
			Apr	21.2 \pm 4.5	6.24 \pm 0.1	12.3 \pm 0.0	49.3	28.2	21.7	0.8
			Jun	21.0 \pm 3.9	6.57 \pm 0.2	25.4 \pm 0.0	43.1	26.2	30.1	0.6
			Aug	11.9 \pm 1.2	6.19 \pm 0.2	21.2 \pm 0.1	61.9	16.4	21.5	0.2
			Oct	15.8 \pm 1.1	6.49 \pm 0.2	11.7 \pm 0.7	54.4	16.2	29.1	0.3
			Dec	17.5 \pm 1.0	6.51 \pm 0.3	7.2 \pm 0.6	51.7	22.2	25.7	0.0
<i>Spartina maritima</i>		2	Feb	7.5 \pm 0.6	6.79 \pm 0.1	12.2 \pm 0.0	37.8	34.3	27.9	0.0
			Apr	5.9 \pm 1.0	7.18 \pm 0.0	12.7 \pm 0.2	27.2	32.7	40.0	0.1
			Jun	9.8 \pm 4.9	7.07 \pm 0.2	19.9 \pm 0.1	47.4	38.7	13.9	0.0
			Aug	6.8 \pm 2.0	7.08 \pm 0.1	18.2 \pm 0.0	31.0	42.9	26.1	0.0
			Oct	6.0 \pm 3.4	6.90 \pm 0.1	15.0 \pm 0.1	27.1	30.0	42.9	0.0
			Dec	6.0 \pm 1.6	6.89 \pm 0.1	11.3 \pm 0.4	35.6	35.2	29.2	0.0
		3	Feb	12.3 \pm 1.6	6.56 \pm 0.5	12.0 \pm 0.1	53.6	22.3	24.0	0.1
			Apr	10.0 \pm 1.1	6.08 \pm 0.1	14.3 \pm 0.0	64.7	18.2	16.9	0.2
			Jun	11.6 \pm 3.1	6.35 \pm 0.2	25.4 \pm 0.0	54.6	22.5	22.7	0.2
			Aug	8.7 \pm 0.3	6.51 \pm 0.3	22.6 \pm 0.1	62.9	18.9	18.2	0.0
			Oct	9.0 \pm 1.0	6.13 \pm 0.1	12.3 \pm 0.8	62.5	16.8	20.6	0.1
			Dec	10.3 \pm 1.4	6.62 \pm 0.4	7.9 \pm 0.7	61.2	19.8	18.8	0.0

Supplementary Table S1 – Sediment characterization of *Juncus maritimus* and *Spartina maritima* sampled sites along one year (mean \pm SD, N=3). Organic matter (OM) is expressed as loss on ignition (LOI).

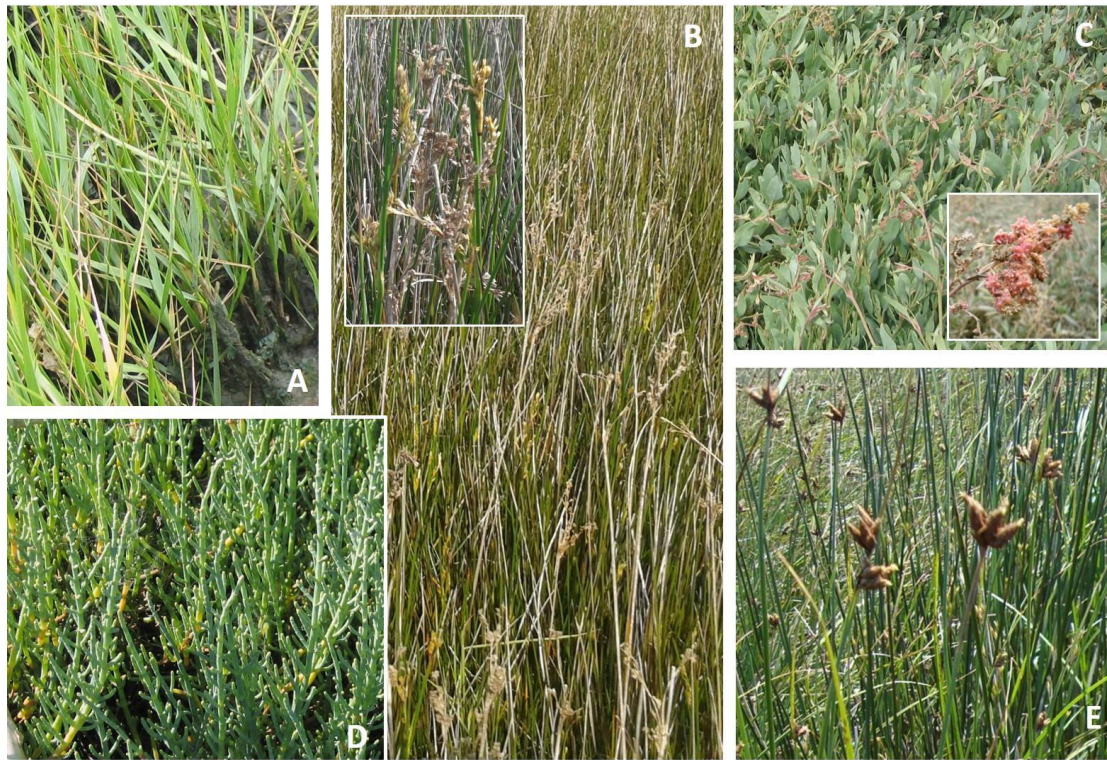
Supplementary Table S2

Stock compartment		Low marsh	Mid & high marsh			
		<i>Spartina maritima</i>	<i>Juncus maritimus</i>	<i>Halimione portulacoides</i> ^(a)	<i>Sarcocornia perennis</i> ^(a)	<i>Bolboschoenus maritimus</i> ^(a)
C	Plant	373.4±29.5	1384.1±24.8	843.0	863.1	1141.2
	Sediment	119.5±5.3	132.7±5.8	157.3	152.0	182.9
	TOTAL	492.9±19.8	1516.8±26.1	1000.3	1015.2	1324.0
N	Plant	13.4±1.1	47.9±1.2	43.6	34.7	36.2
	Sediment	9.9±1.3	10.8±0.6	38.5	37.4	17.5
	TOTAL	23.3±0.1	58.7±1.0	109.0	98.4	66.0
P	Plant	2.2±0.1	8.6±0.1	22.4	14.5	6.0
	Sediment	2.8±0.2	2.8±0.3	6.9	5.4	4.5
	TOTAL	5.0±0.1	11.5±0.3	29.3	19.9	10.5

^(a)Estimated from Sousa et al. (2010) data and considering the mean sedimentation rates estimated for Ria de Aveiro (see methods section).

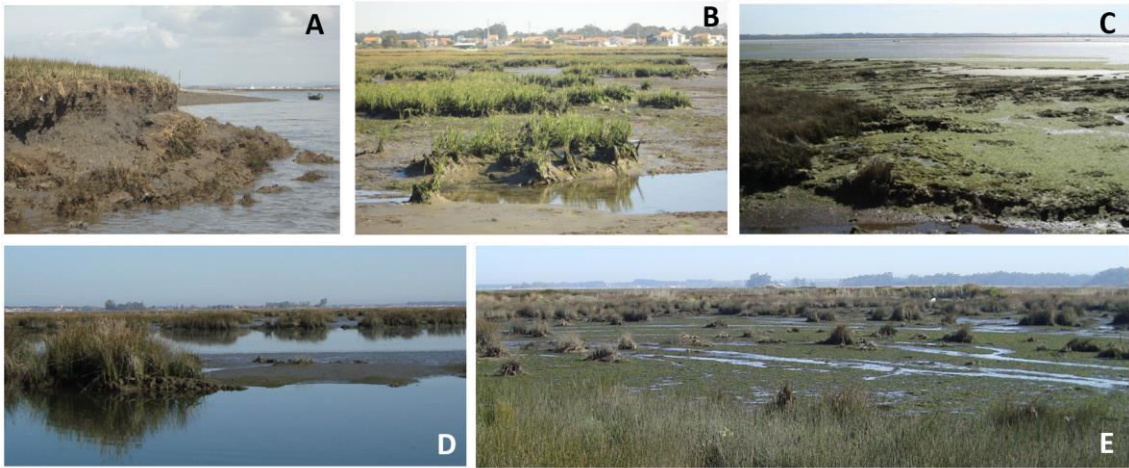
Supplementary Table S2 – Blue C, N and P annual stocks (mean) at the Ria de Aveiro salt marshes, in the plant (above- and belowground material – annual mean (N=18) – g m⁻²), in the sediment (annual mean (N=18) – g m⁻² y⁻¹), and the total (plant and sediment – g m⁻² y⁻¹). Mean values (N=18) and standard error (SE) is also included for *S. maritima* and *J. maritimus* marshes.

Supplementary Figure S1



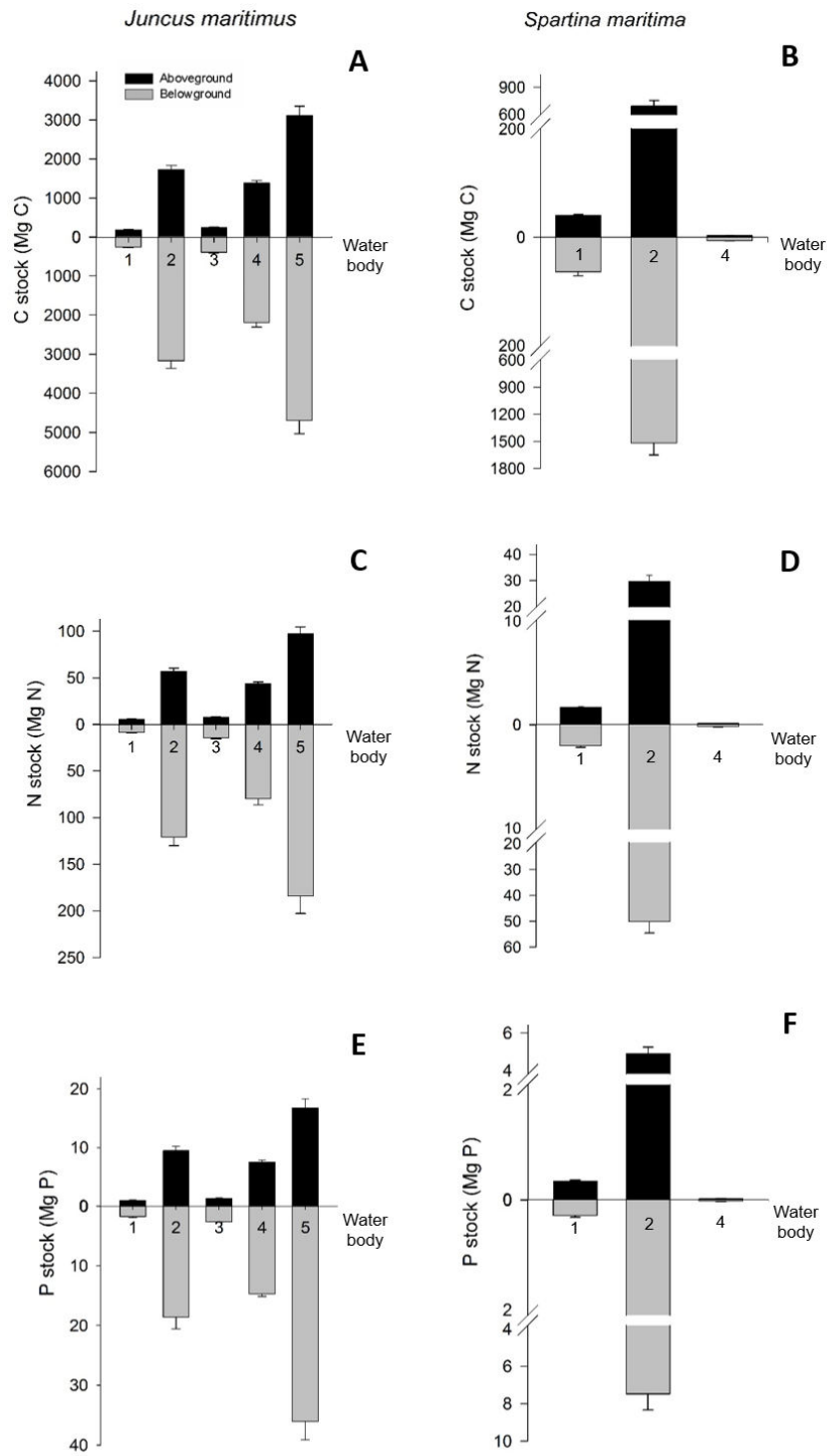
Supplementary Figure S1 – Salt marsh plants: *Spartina maritima* (A), *Juncus maritimus* with flowering in detail (B), *Halimione portulacoides* with flowering in detail (C), *Sarcocornia perennis* (D), *Bolboeschenus maritimus* (E). Pictures copyright: ©A.I. Sousa and ©A.I. Lillebø.

Supplementary Figure S2



Supplementary Figure S2 – Salt marshes showing evidence of erosion of the shorelines in the Ria de Aveiro. *Spartina maritima* marsh (A, B), eroded shoreline in the marsh (C), and *Juncus maritimus* marsh (D, E). Pictures copyright: ©A.I. Sousa and ©A.I. Lillebø.

Supplementary Figure S3



Supplementary Figure S3 – Total C, N and P stocks (mean \pm SE, N=18) at the aboveground biomass (leaves and stems) and belowground biomass (roots and rhizomes) in *Juncus maritimus* (A, C, E) and *Spartina maritima* (B, D, F) marshes at Ria de Aveiro, per water body (WB).