

Figure S1. Observed daily temperature maximum (red), minimum (blue) and rainfall (bar) at Seventeen Seventy (Station 039314). Source: Bureau of Meteorology.

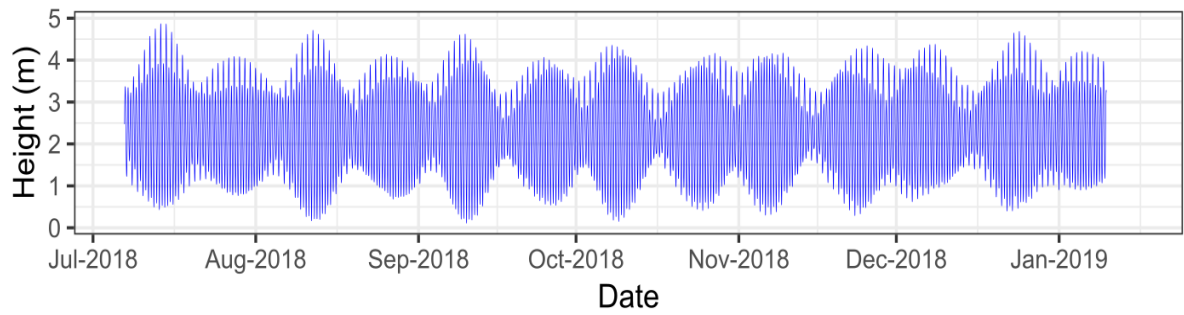


Figure S2. Tides recorded at the Gladstone gauge (Auckland Point 052027A), 25km northwest of the tidal marsh sites. Source: Transport and Main Roads, Queensland.

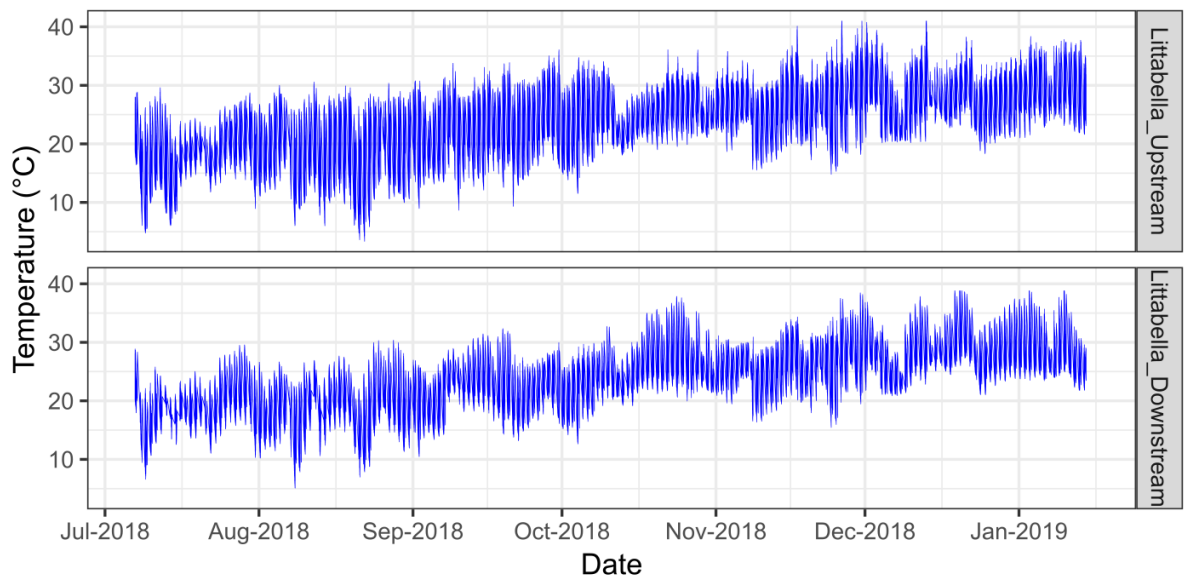


Figure S3. Water temperature measured in Littabella estuary at the upstream (RH3) and downstream (RH2) locations

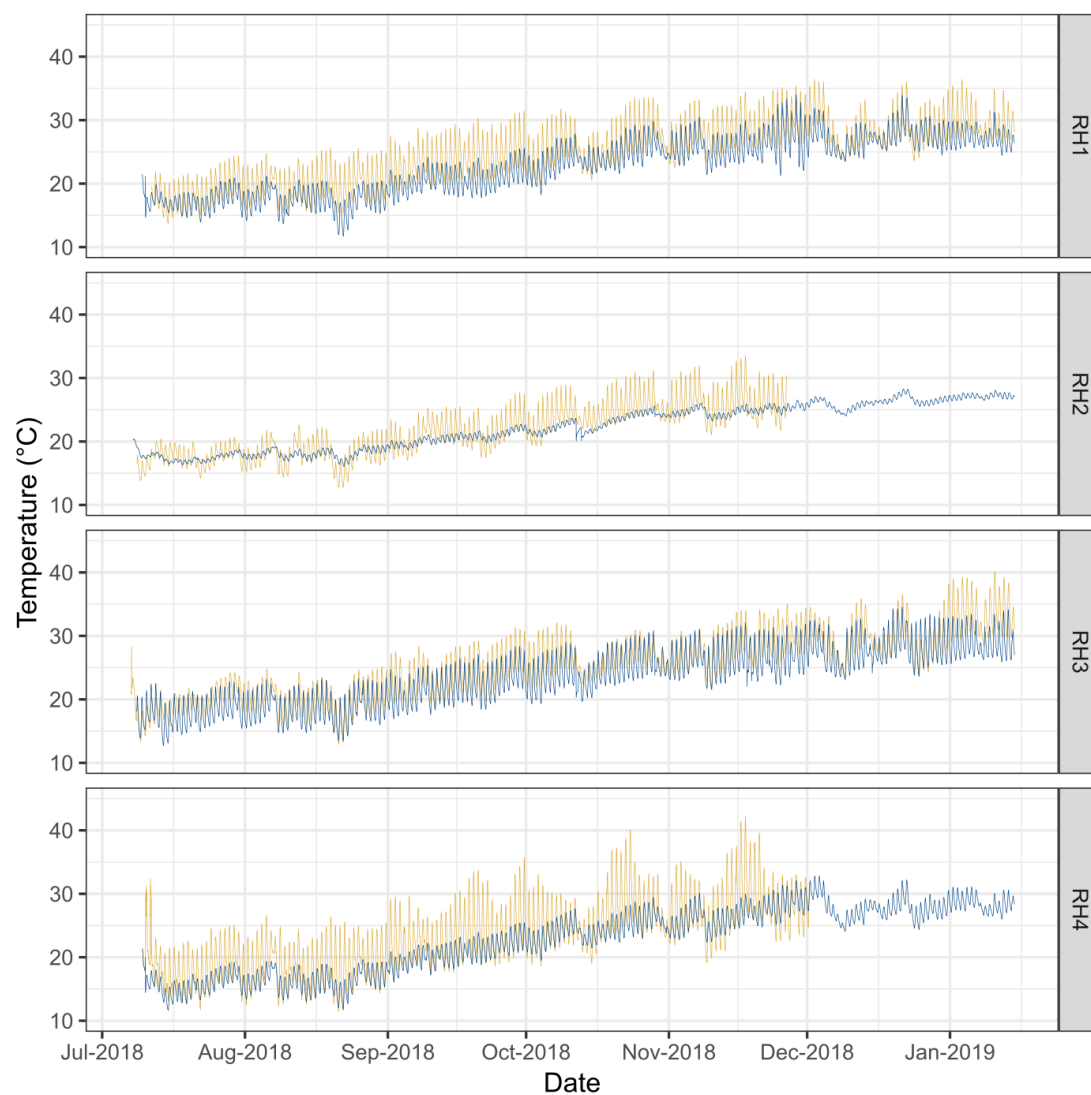


Figure S4. Tidal marsh sediment temperature measured at surface (yellow) and bottom (blue) at Round Hill Reserve (RH1, RH4) and Littabella Estuary (RH2, RH3). Temperature records for surface loggers at RH2 and RH4 discontinue beyond November 2018 due to logger malfunction.

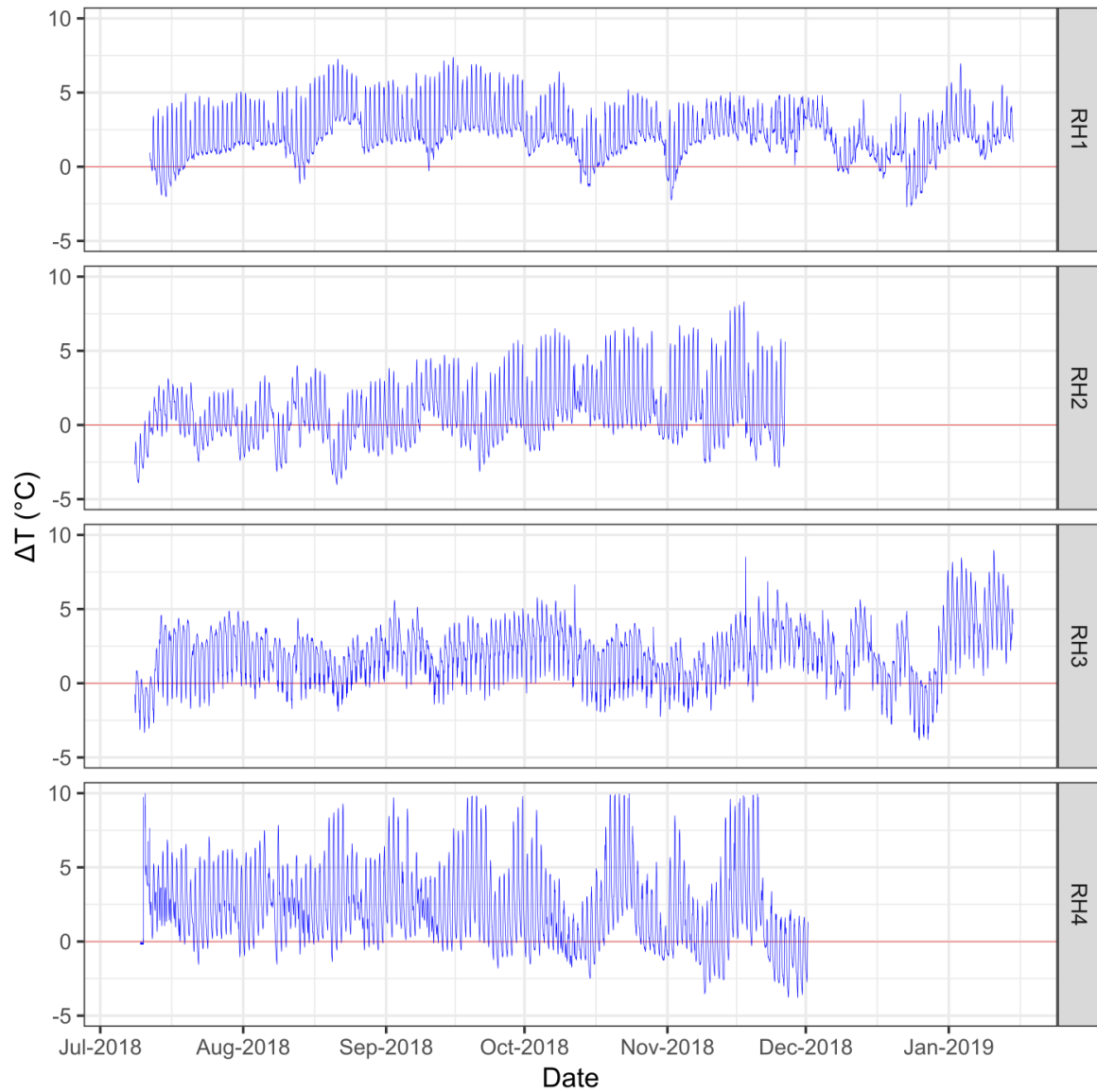


Figure S5. Difference in temperature (ΔT) between surface and bottom sediments at Round Hill Reserve (RH1, RH4) and Littabella Estuary (RH2, RH3).

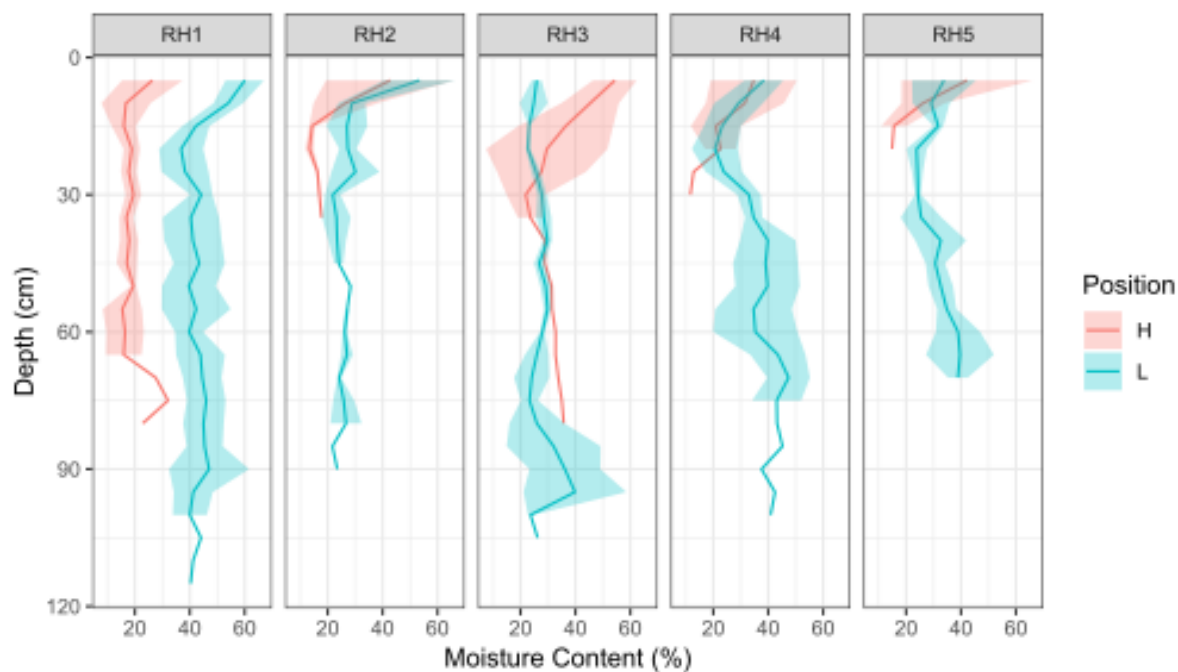


Figure S6. Mean moisture content (% w/w) of soils collected from high (H) and low (L) marsh sites at Round Hill tidal marsh sites RH1 to RH5. Colored shading denotes one standard deviation from mean ($n = 3$).

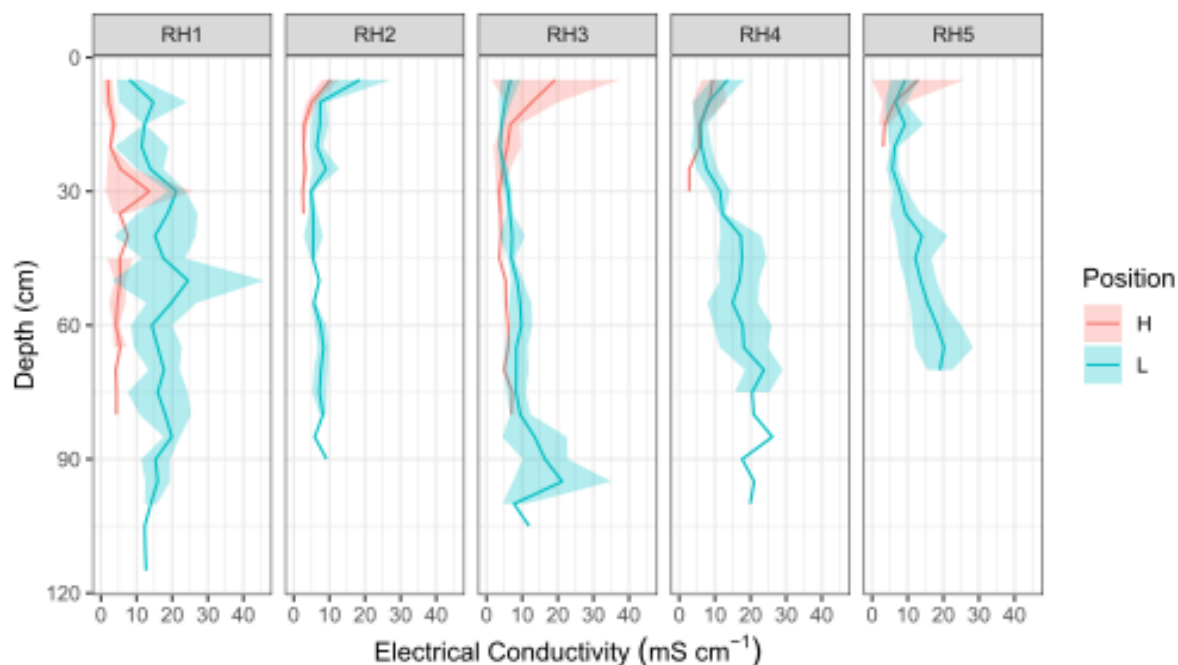


Figure S7. Mean electrical conductivity (mS cm^{-1}) of soils collected from high (H) and low (L) marsh sites at Round Hill tidal marsh sites RH1 to RH5. Colored shading denotes one standard deviation from mean ($n = 3$).

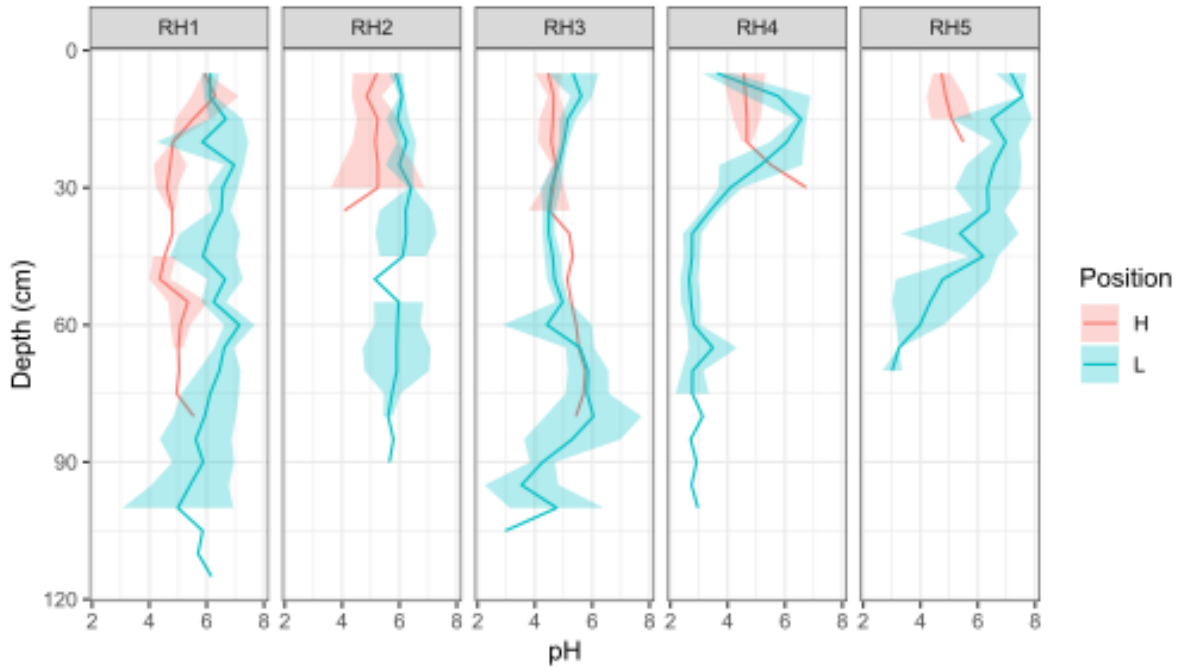


Figure S8. Mean pH of soils collected from high (H) and low (L) positions at Round Hill tidal marsh sites RH1 to RH5. Colored shading denotes one standard deviation from mean ($n = 3$).

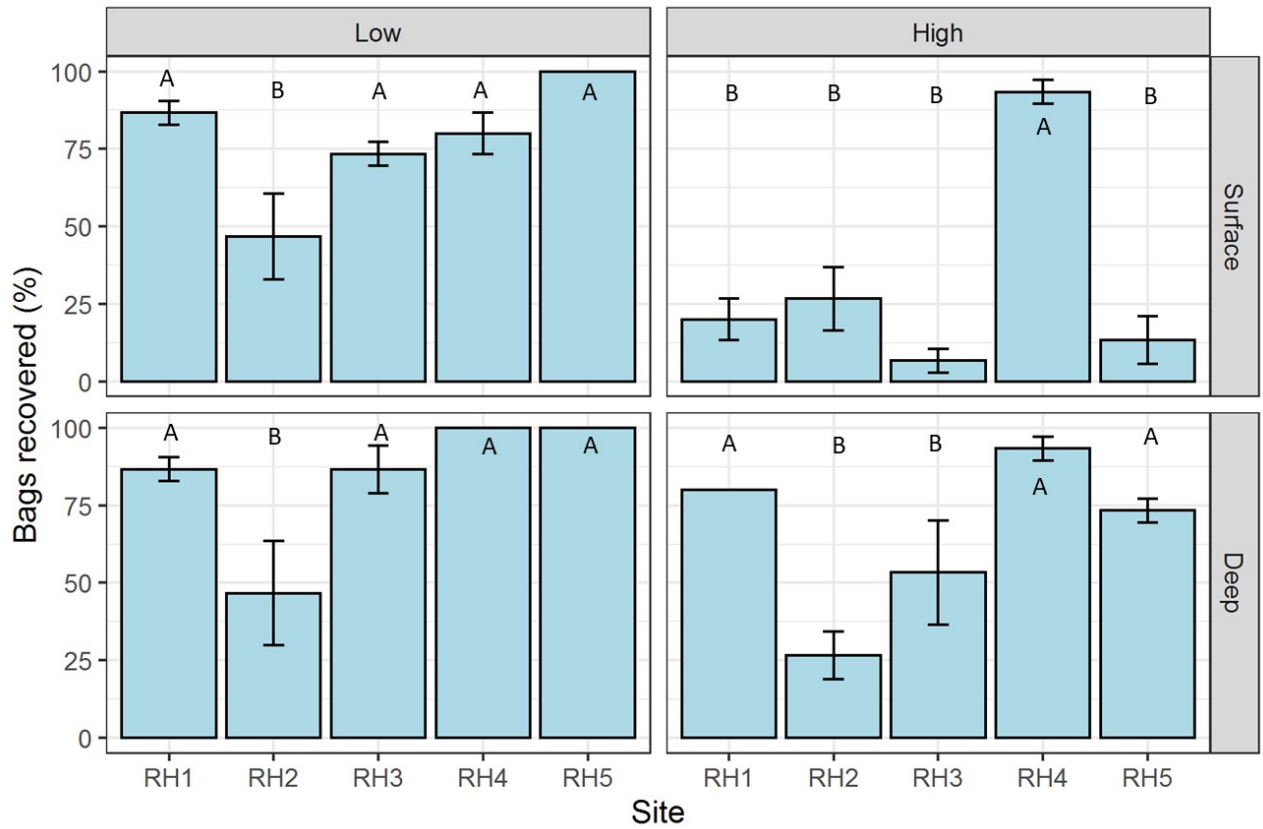


Figure S9. Decomposition bag recover percentage for high and low marsh, on the surface and buried at depth. Shown are the mean and one standard error from the mean ($n = 5$).

Table S1. Plant species detected at wetland locations during quadrat surveys.

Species	Common name
Algae	Algae
<i>Avicennia sp.</i>	Mangrove
<i>Bruguiera sp.</i>	Mangrove
<i>Cyperus eragrostis</i>	Tall flatsedge
<i>Eleocharis dulcis</i>	Water chestnut
<i>Eragrostis curvula</i>	African lovegrass
Grass	Grass
<i>Juncus articulatus</i>	Jointed rush
<i>Juncus usitatus</i>	Common rush
Leaf litter	NA
<i>Nymphaea</i>	Water lily
<i>Portulaca bicolor</i>	Pigweed
<i>Sarcocornia quinqueflora</i>	Beaded glasswort
<i>Suaeda australis</i>	Austral seablite
<i>Sporobolus virginicus</i>	Salt couch

Table S2. Diversity indices for tidal marsh vegetation. Species richness is given as median, Shannon's 1-D and Simpson's H' indices are reported as mean and standard deviation (n = 5).

Trip	Code	Location	Tidal position	Species richness	Simpson's 1-D	Shannon's H'
Jul-18	RH1	Round Hill	High	2	0.13 ± 0.18	0.2 ± 0.26
			Low	2	0.31 ± 0.21	0.49 ± 0.33
	RH2	Littabella Down	High	1	0.07 ± 0.14	0.11 ± 0.21
			Low	1	0.03 ± 0.1	0.05 ± 0.15
	RH3	Littabella Up	High	2	0.12 ± 0.15	0.21 ± 0.21
			Low	-	-	-
	RH4	Daniels	High	2	0.15 ± 0.17	0.25 ± 0.26
			Low	1	0	0
	RH5	Knuckies	High	1	0	0
			Low	1	0	0
Jun-19	RH1	Round Hill	High	1	0.1 ± 0.18	0.15 ± 0.26
			Low	2	0.2 ± 0.22	0.29 ± 0.31
	RH2	Littabella Down	High	2	0.05 ± 0.1	0.1 ± 0.15
			Low	1	0.01 ± 0.03	0.02 ± 0.07
	RH3	Littabella Up	High	2	0.17 ± 0.17	0.27 ± 0.25
			Low	1.5	0.12 ± 0.15	0.2 ± 0.23
	RH4	Daniels	High	1	0	0
			Low	1	0.01 ± 0.04	0.03 ± 0.08
	RH5	Knuckies	High	1	0	0
			Low	2	0.11 ± 0.11	0.2 ± 0.18