

Supplementary material

Lateral Hydrological Connectivity Driven by Tidal Flooding Regulates Range-Expansion of Invasive *Spartina alterniflora* in Tidal Channel-Salt Marsh Systems

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Table S1. Summary of the result from general linear models (i.e., GLMs) for the lateral hydrological connectivity at points progressively farther from a belt of *Spartina alterniflora* (i.e., 0 m, 50 m, 100 m, 200 m, and 350 m away) in three elevational marsh zones (i.e., low marsh, middle marsh and high marsh).

Variable	Source	df	Wald χ^2	<i>P</i>
Lateral hydrological connectivity	Zone	2	3568.8	< 0.001***
	Distance	4	2844.9	< 0.001***
	Zone $\times$ Distance	8	2033.0	< 0.001***

***, $P < 0.001$; **, $P < 0.01$; *, $P < 0.05$.

Table S2. Summary of the GLMs results for the number of plants, maximum plant height, number of inflorescences and the total dry biomass of *Spartina alterniflora* (i.e., 0 m, 50 m, 100 m, 200 m, and 350 m away) in three elevational marsh zones (i.e., low marsh, middle marsh and high marsh).

Variable	Source	df	Wald χ^2	<i>P</i>
Number of plants	Zone	4	382.32	< 0.001***
	Distance	6	301.85	< 0.001***
	Zone $\times$ Distance	8	343.21	< 0.001***
Maximum plant height	Zone	2	339.50	< 0.001***
	Distance	4	203.90	< 0.001***
	Zone $\times$ Distance	8	126.67	< 0.001***
Number of inflorescences	Zone	4	113.76	< 0.001***
	Distance	6	95.27	< 0.001***
	Zone $\times$ Distance	8	105.56	< 0.001***
Dry biomass of plants	Zone	2	412.89	< 0.001***
	Distance	4	227.06	< 0.001***
	Zone $\times$ Distance	8	99.54	< 0.001***

***, $P < 0.001$; **, $P < 0.01$; *, $P < 0.05$.

Table S3. Effect of lateral distance on three forms of physical stress, namely soil salinity, soil moisture, and soil hardness, recorded at points progressively farther from a belt of *Spartina alterniflora* (i.e., 0, 50, 100, 200, and 350 m away) in three elevational salt marsh zone (i.e., low marsh, middle marsh and high marsh).

Form of stress	Source	Marsh zone	df	F	P
Soil salinity	Lateral distance	Low marsh	4	1.99	0.12
		Middle marsh	4	112.00	< 0.001 ^{***}
		High marsh	4	202.67	< 0.001 ^{***}
Soil moisture	Lateral distance	Low marsh	4	6.67	< 0.001 ^{***}
		Middle marsh	4	19.13	< 0.001 ^{***}
		High marsh	4	73.00	< 0.001 ^{***}
Soil hardness	Lateral distance	Low marsh	4	0.79	0.54
		Middle marsh	4	50.22	< 0.001 ^{***}
		High marsh	4	29.88	< 0.001 ^{***}

***, $P < 0.001$; **, $P < 0.01$; *, $P < 0.05$.