

## Supplement 1

**Table S1:** Full statistical result of the simplest model by AIC of all aggression assay tests. Asterisks (\*) represent significant effects.

<i>Interaction Occurs</i>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Relative CL of Larger Crab	$4.189 \times 10^8$	1.209	0.227
Relative CL of Smaller Crab	$-4.189 \times 10^8$	-1.209	0.227
Difference in Relative CL	$-4.189 \times 10^8$	-1.209	0.227
Structure: Dock vs Mangrove	0.306	0.562	0.574
Structure: Dock vs Salt Marsh	1.618	2.759	0.006*
Structure: Dock vs Neutral	1.130	2.603	0.009*
Structure: Mangrove vs Salt Marsh	1.312	2.050	0.040*
Structure: Mangrove vs Neutral	0.824	1.769	0.077
Structure: Salt Marsh vs Neutral	-0.488	-0.926	0.355
<i>Duration of Interaction</i>			
<i>Statistical Test:</i>		<i>Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Relative CH of Larger Crab	14.318	1.784	0.076
Structure: Dock vs Mangrove	8.445	0.538	0.591
Structure: Dock vs Salt Marsh	25.175	1.642	0.102
Structure: Dock vs Neutral	28.803	2.298	0.023*
Structure: Mangrove vs Salt Marsh	16.730	1.051	0.295
Structure: Mangrove vs Neutral	20.357	1.593	0.113
Structure: Salt Marsh vs Neutral	3.628	0.285	0.776
<i>Shield Posture Occurs</i>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Duration of Interaction	0.010	2.110	0.035*
Relative CL of Smaller Crab	-2.438	-2.042	0.041*
Difference in Relative CL	-1.23	-1.540	0.124
Relative CH of Larger Crab	1.064	1.400	0.161
Relative CH of Smaller Crab	1.183	1.464	0.143
Structure: Dock vs Mangrove	2.552	2.171	0.030*
Structure: Dock vs Salt Marsh	-0.028	-0.040	0.968
Structure: Dock vs Neutral	0.395	0.651	0.515
Structure: Mangrove vs Salt Marsh	-2.580	-2.241	0.025*
Structure: Mangrove vs Neutral	-2.156	-1.986	0.008*
Structure: Salt Marsh vs Neutral	0.423	0.809	0.418
<i>Pre-Fight Display Occurs</i>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Difference in Body Size	1.283	1.646	0.100

Body Size of Smaller Crab	0.271	2.885	0.004*
Relative CL of Larger Crab	$-5.328 \times 10^8$	-1.840	0.066
Relative CL of Smaller Crab	$5.328 \times 10^8$	1.840	0.066
Difference in Relative CL	$5.328 \times 10^8$	1.840	0.066
Relative CH of Larger Crab	$-5.686 \times 10^8$	-1.608	0.108
Relative CH of Smaller Crab	$5.686 \times 10^8$	1.608	0.108
Difference in Relative CH	$5.686 \times 10^8$	1.608	0.108
<b><i>Fight Occurs</i></b>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Duration of Interaction	0.0219	2.946	0.003*
<b><i>Duration of Fight</i></b>			
<i>Statistical Test:</i>		<i>Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Relative CH of Larger Crab	9.458	1.588	0.114
<b><i>Post-Fight Display Occurs</i></b>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Body Size of Larger Crab	0.2192	2.117	0.034*
Structure: Dock vs Mangrove	2.131	2.528	0.011*
Structure: Dock vs Salt Marsh	0.8037	1.089	0.276
Structure: Dock vs Neutral	1.701	2.665	0.008*
Structure: Mangrove vs Salt Marsh	-1.327	-1.682	0.093
Structure: Mangrove vs Neutral	-0.430	-0.606	0.544
Structure: Salt Marsh vs Neutral	0.897	1.804	0.071
<b><i>Chasing Behavior Occurs</i></b>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Null Model/Intercept	-0.954	-5.845	<0.001
<b><i>Retreat Behavior Occurs</i></b>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Relative CL of Smaller Crab	-1.538	-1.939	0.053
Relative CH of Smaller Crab	1.591	1.970	0.049*
Structure: Dock vs Mangrove	2.030	1.714	0.087
Structure: Dock vs Salt Marsh	-0.775	-1.103	0.270
Structure: Dock vs Neutral	-0.240	-0.386	0.700
Structure: Mangrove vs Salt Marsh	-2.805	-2.448	0.014*
Structure: Mangrove vs Neutral	-2.271	-2.097	0.034*
Structure: Salt Marsh vs Neutral	0.534	1.072	0.284
<b><i>Larger Competitor Wins</i></b>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Body Size of Larger Crab	-3.579	-1.221	0.222
Body Size of Smaller Crab	3.490	1.192	0.233

Difference in Body Size	3.354	1.094	0.274
Relative CL of Larger Crab	-1.741	-1.487	0.137
Difference in Relative CL	1.856	2.152	0.031*
Relative CH of Larger Crab	$-8.125 \times 10^8$	-1.296	0.195
Relative CH of Smaller Crab	$8.125 \times 10^8$	1.296	0.195
Difference in Relative CH	$8.125 \times 10^8$	1.296	0.195
<b>Initiate Wins</b>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Difference in Relative CL	-0.378	-1.410	0.158
<b>Competitor Falls in Water</b>			
<i>Statistical Test:</i>		<i>Binomial General Linear Model</i>	
<b>Explanatory Variable</b>	<b>Estimate</b>	<b>z-value</b>	<b>p-value</b>
Duration of Interaction	0.050	3.862*	<0.001*
Relative CL of Smaller Crab	-3.918	-1.902	0.057
Difference in Relative CL	-2.755	-2.441	0.015*
Relative CH of Smaller Crab	2.606	1.385	0.166
Difference in Relative CH	1.000	0.915	0.360
Structure: Dock vs Mangrove	-3.825	-3.063	0.002*
Structure: Dock vs Salt Marsh	0.708	1.067	0.286
Structure: Mangrove vs Salt Marsh	4.533	3.524	<0.001*

**Table 2:** Morphological measurements of crabs from each habitat.

<b>Measure</b>	<b>Habitat</b>	<b>Average</b>	<b>SD</b>
Body Size	Dock	15.39 mm	2.12
	Mangrove	15.84 mm	3.05
	Salt marsh	12.95 mm	1.54
CL	Dock	8.48 mm	1.72
	Mangrove	8.37 mm	2.59
	Salt marsh	6.94 mm	1.20
CH	Dock	5.10 mm	1.24
	Mangrove	4.90 mm	1.95
	Salt marsh	4.22 mm	0.89
CH:CL	Dock	0.60	0.05
	Mangrove	0.57	0.06
	Salt marsh	0.61	0.04