The following supplement accompanies the article

Impact of landscape structure on propagule dispersal in mangrove forests

T. Van der Stocken*, D. J. R. De Ryck, B. Vanschoenwinkel, E. Deboelpaep, T. J. Bouma, F. Dahdouh-Guebas, N. Koedam

*Corresponding author: tvdstock@gmail.com

Marine Ecology Progress Series 524: 95–106 (2015)

Supplement.

Fig. S1. Photograph of dispersal propagules of the four studied species.

*Corresponding author: tvdstock@gmail.com
Table S1. Result of the generalized linear model for the effect of root density (10, 20 and 30 roots m⁻²) and propagule type (both categorical predictors) on the fraction of retained (resp. stranded) and non-retained (resp. not stranded) propagules. Water flow velocity was 0.10 m s⁻¹.

<table>
<thead>
<tr>
<th></th>
<th>Retained</th>
<th>Stranded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.0005</td>
<td>*</td>
</tr>
<tr>
<td>Root density</td>
<td>0.010</td>
<td>0.002</td>
</tr>
<tr>
<td>Propagule type</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Propagule type × Root density</td>
<td>0.994</td>
<td>–</td>
</tr>
</tbody>
</table>

**Bold** denotes statistical significance at $p < 0.05$, * $p \leq 0.0001$

Table S2. Result of the generalized linear model for the effect of water flow velocity (0.05, 0.10 and 0.20 m s⁻¹) and propagule type (both categorical predictors) on the fraction of retained (resp. stranded) and non-retained (resp. not stranded) propagules. Root density was 0.20 roots m⁻².

<table>
<thead>
<tr>
<th></th>
<th>Retained</th>
<th>Stranded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.068</td>
<td>0.100</td>
</tr>
<tr>
<td>Water flow velocity</td>
<td>0.566</td>
<td>0.101</td>
</tr>
<tr>
<td>Propagule type</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Propagule type × Water flow velocity</td>
<td>0.484</td>
<td>–</td>
</tr>
</tbody>
</table>

**Bold** denotes statistical significance at $p < 0.05$, * $p \leq 0.0001$
Table S3. Result of the general linear model for the effect of day, propagule type, release location and the multiple interaction terms on dispersal distance of mangrove propagules in a natural mangrove system.

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>Df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>221788.0</td>
<td>1</td>
<td>221788.0</td>
<td>340.4986</td>
<td>*</td>
</tr>
<tr>
<td>Day</td>
<td>24487.3</td>
<td>2</td>
<td>12243.7</td>
<td>18.7970</td>
<td>*</td>
</tr>
<tr>
<td>Propagule type</td>
<td>6695.4</td>
<td>1</td>
<td>6695.4</td>
<td>10.2791</td>
<td>0.0014</td>
</tr>
<tr>
<td>Release location</td>
<td>8885.7</td>
<td>3</td>
<td>2961.9</td>
<td>4.5472</td>
<td>0.0037</td>
</tr>
<tr>
<td>Day × Propagule type</td>
<td>9415.4</td>
<td>2</td>
<td>4707.7</td>
<td>7.2275</td>
<td>0.0008</td>
</tr>
<tr>
<td>Day × Release location</td>
<td>14407.6</td>
<td>6</td>
<td>2401.3</td>
<td>3.6865</td>
<td>0.0014</td>
</tr>
<tr>
<td>Propagule type × Release location</td>
<td>606.1</td>
<td>3</td>
<td>202.0</td>
<td>0.3102</td>
<td>0.8180</td>
</tr>
<tr>
<td>Day × Propagule type × Release location</td>
<td>11339.6</td>
<td>6</td>
<td>1889.9</td>
<td>2.9015</td>
<td>0.0086</td>
</tr>
<tr>
<td>Error</td>
<td>322424.3</td>
<td>495</td>
<td>651.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bold** denotes statistical significance at $p < 0.05$, $* p \leq 0.0001$
Table S4. Basic circular statistics for the propagules recovered in our field experiments after 5 high tides (day 3). In total, 30 *Ceriops tagal* (Ct) and 30 *Rhizophora mucronata* (Rm) propagules were released in four different plots along an intertidal transect – AML: *Avicennia marina* landward; CT: *Ceriops tagal*; RM: *Rhizophora mucronata*; AMC: *A. marina* creekward. A clear bimodal directionality was found in the dispersal movement of both the *C. tagal* and *R. mucronata* propagules (Fig. 4). We used the average of all dispersal direction data to group the data into two groups on which circular statistics were applied.

<table>
<thead>
<tr>
<th>GROUP 1 (&gt;218.2° and &lt;38.2°)</th>
<th>GROUP 2 (&lt;218.2° and &gt;38.2°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AML</td>
<td>CT</td>
</tr>
<tr>
<td>Ct</td>
<td>Rm</td>
</tr>
<tr>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Mean angle (degr.)</td>
<td>268.5</td>
</tr>
<tr>
<td>171.4</td>
<td>185.2</td>
</tr>
<tr>
<td>SD</td>
<td>29.9</td>
</tr>
<tr>
<td>21.5</td>
<td>28.6</td>
</tr>
<tr>
<td>Rayleigh test (p)</td>
<td>*</td>
</tr>
</tbody>
</table>

**Bold** denotes statistical significance at $p < 0.05$, * $p \leq 0.0001$