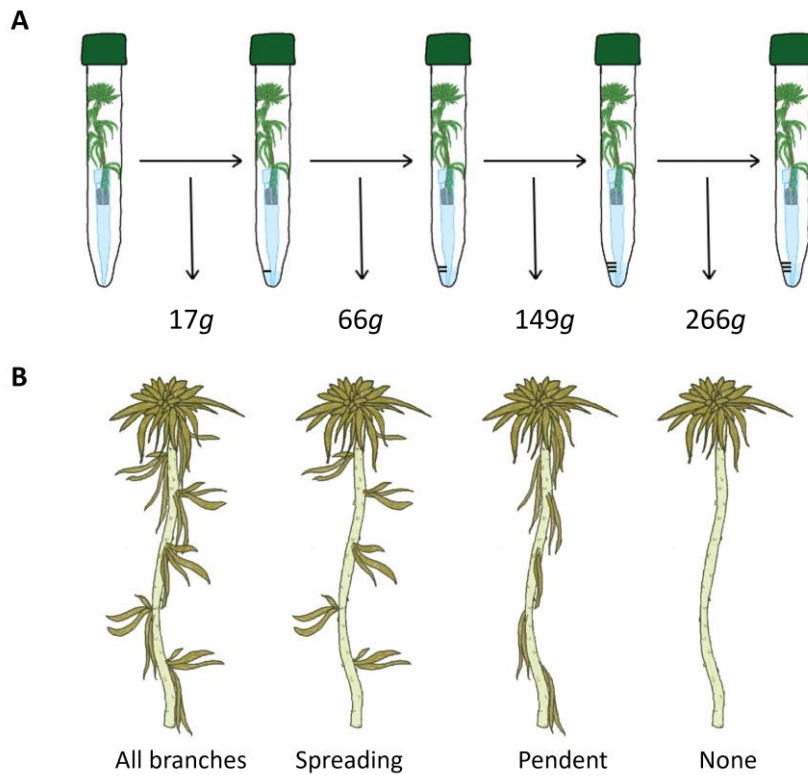
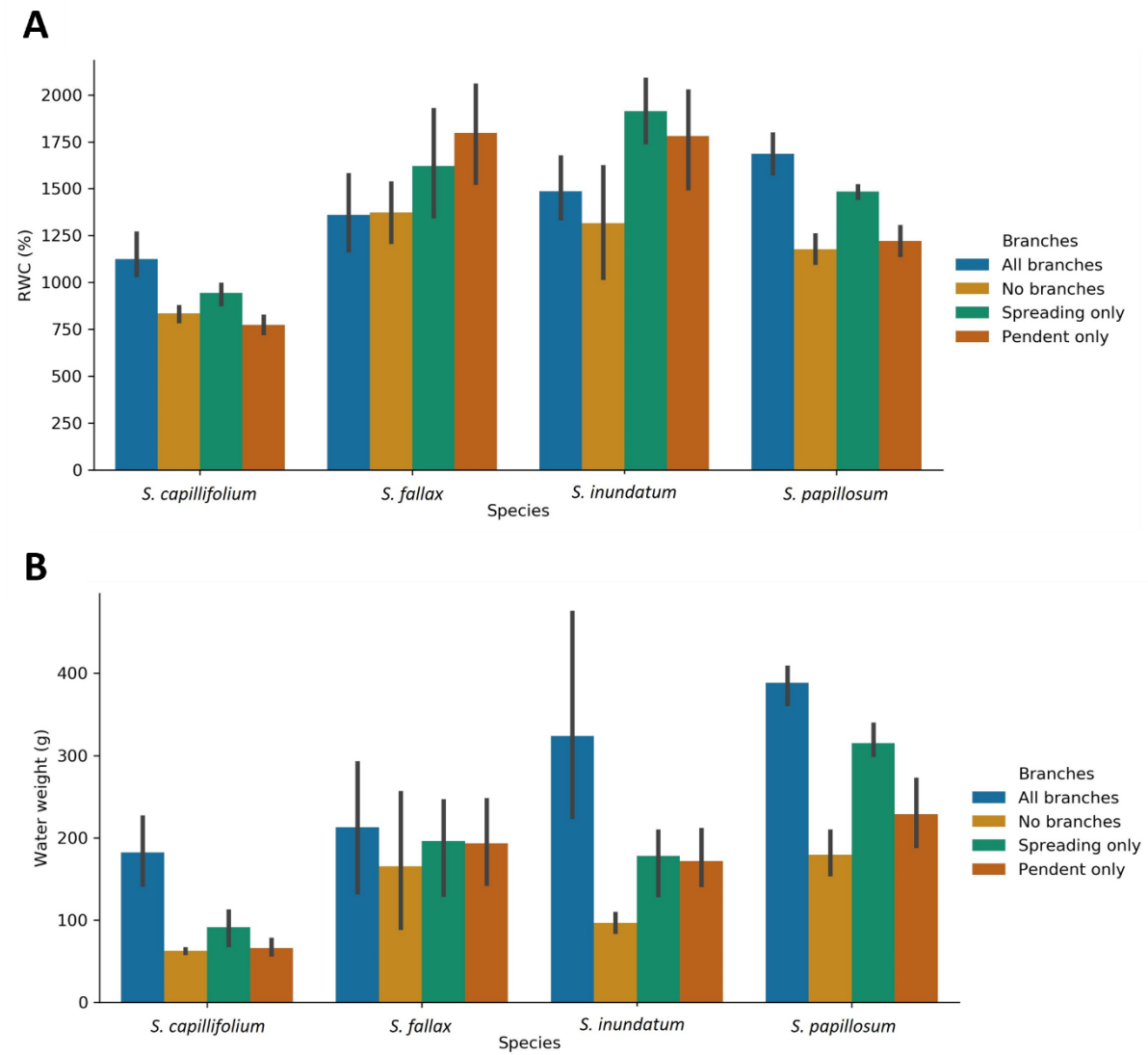


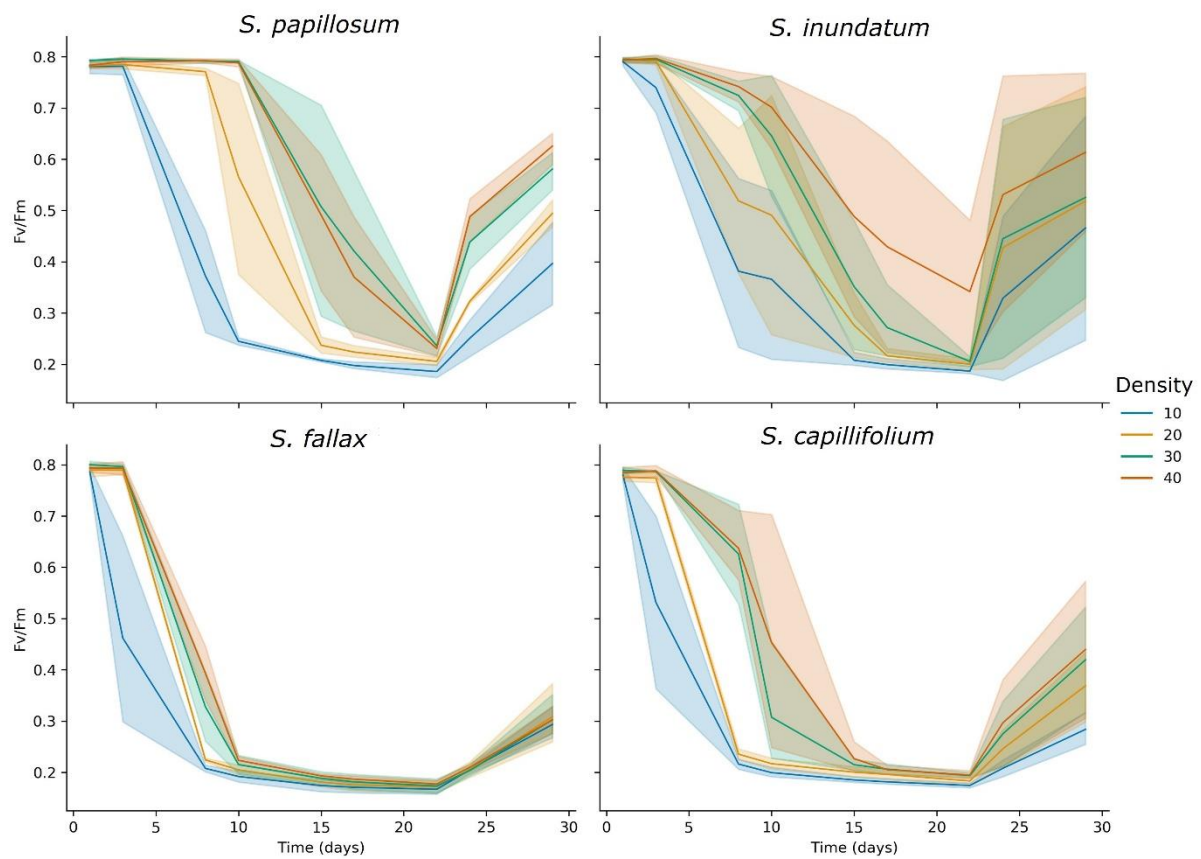
## Supplementary material



**Figure S1.** **A.** Diagram illustrating the set up for water removal by centrifugation (please see methods for details). **B.** Diagram illustrating branch removal of *Sphagnum* plants before centrifugation.



**Figure S2. A.** Plant water content, expressed in grams of water per gram of dry weight, is not affected by branch removal for the four *Sphagnum* species as indicated. **B.** Total amount of water stored in whole plants or plants where the branches have been selectively removed as indicated.



**Figure S3.** Effect of manipulated canopy density on plant heath as measured by the chlorophyll fluoresce index  $F_v/F_m$  during an imposed drought scenario. Plants in cosms at the indicated stem density for each species were subjected to water withdrawal for 21 days after which they were re-watered.  $F_v/F_m$  was calculated at different time points during the experiment. Lines represent the mean and the shaded areas the 95% confidence interval for each sample.

**Table S1:** Statistical analysis for the data presented in Figures 2 and 3.

Figure 2A. Within species comparison						
<i>g</i>		0	17	66	149	266
S. capillifolium	300	ns	-	ns	ns	*
	600	**	ns	-	ns	ns
	900	**	ns	ns	-	ns
	1500	**	*	ns	ns	-
S. fallax	300	ns	-	ns	ns	ns
	600	*	ns	-	ns	ns
	900	*	ns	ns	-	ns
	1500	**	ns	ns	ns	-
S. inundatum	300	**	-	**	**	**
	600	**	**	-	ns	ns
	900	**	**	ns	-	ns
	1500	**	**	ns	ns	-
S. papillosum	300	**	-	**	**	**
	600	**	**	-	ns	ns
	900	**	**	ns	-	ns
	1500	**	**	ns	ns	-
Figure 2A. Between species comparison						
		S. capillifolium	S. fallax	S. inundatum	S. papillosum	
17g	S. capillifolium	-	ns	*	**	
	S. fallax	ns	-	ns	*	
	S. inundatum	*	ns	-	*	
	S. papillosum	**	*	*	-	
66g	S. capillifolium	-	ns	**	**	
	S. fallax	ns	-	ns	**	
	S. inundatum	**	ns	-	*	
	S. papillosum	**	**	*	-	
149g	S. capillifolium	-	ns	**	**	
	S. fallax	ns	-	ns	**	
	S. inundatum	**	ns	-	**	
	S. papillosum	**	**	**	-	
266g	S. capillifolium	-	ns	**	**	
	S. fallax	ns	-	ns	**	
	S. inundatum	**	ns	-	**	
	S. papillosum	**	**	**	-	
Figure 3A. No Branches						
<i>g</i>		0	17	66	149	266
S. capillifolium	300	ns	-	ns	*	**
	600	ns	ns	-	ns	ns
	900	*	*	ns	-	ns
	1500	**	**	ns	ns	-
S. fallax	300	ns	-	*	*	*
	600	**	*	-	ns	ns
	900	**	*	ns	-	ns
	1500	**	*	ns	ns	-
S. inundatum	300	*	-	**	**	**
	600	**	**	-	ns	*
	900	**	**	ns	-	
	1500	**	**	*	ns	
S. papillosum	300	*	-	*	*	*
	600	**	*	-	ns	ns
	900	**	*	ns	-	ns
	1500	**	*	ns	ns	-
Figure 3B. Spreading only						
<i>g</i>		0	17	66	149	266
S. capillifolium	300	ns	-	*	*	**
	600	*	*	-	ns	ns
	900	*	*	ns	-	ns
	1500	**	**	ns	ns	-
S. fallax	300	**	-	ns	ns	ns
	600	**	ns	-	ns	ns
	900	**	ns	ns	-	ns
	1500	**	ns	ns	ns	-
S. inundatum	300	**	-	**	**	**
	600	**	**	-	ns	ns
	900	**	**	ns	-	ns
	1500	**	**	ns	ns	-
S. papillosum	300	**	-	**	**	**
	600	**	**	-	ns	ns
	900	**	**	ns	-	ns
	1500	**	**	ns	ns	-
Figure 3C. Pendent only						
<i>g</i>		0	17	66	149	266
S. capillifolium	300	ns	-	ns	**	**
	600	ns	ns	-	*	*
	900	**	**	*	-	ns
	1500	**	**	*	ns	-
S. fallax	300	**	-	ns	ns	ns
	600	**	ns	-	ns	ns
	900	**	ns	ns	-	ns
	1500	**	ns	ns	ns	-
S. inundatum	300	**	-	ns	ns	ns
	600	**	ns	-	ns	ns
	900	**	ns	ns	-	ns
	1500	**	ns	ns	ns	-
S. papillosum	300	**	-	ns	**	**
	600	**	ns	-	ns	ns
	900	**	**	ns	-	ns
	1500	**	**	ns	ns	-