

**Table S4**

Calibration (node) <sup>1</sup>	Fossil	Justification	Justification source <sup>2</sup>	Minimum age (Ma)	Age justification
Stem node <i>Typha</i> (A)	<i>Typha</i> sp.	Suite of inflorescence characters	Grande (1984)	51.66	Radiometry
Stem node Coryphoideae (B)	<i>Sabalites</i> <i>carolinensis</i>	Suite of leaf characters	Berry (1914)	83.6	Marine biostratigraphy
Stem node <i>Cyclanthus</i> * (C)	<i>Cyclanthus</i> <i>messelensis</i>	Fruit apomorphies	Smith et al. (2008)	47	Radiometry & sedimentation rate
Crown node <i>Dioscorea</i> (D)	<i>Dioscorea</i> <i>wilkinii</i>	Suite of leaf characters	Pan et al. (2014)	27.23	Radiometry
Stem node Lemnoideae (E)	<i>Limnobiophyllum</i> <i>scutatum</i>	Suite of vegetative characters & phylogenetic analysis	Kvaček (1995), Stockey et al. (1997)	66	Multiple stratigraphy controls
Stem node monocots* (F)	<i>Liliacidites</i> sp. A of Doyle & Hickey (1976)	Phylogenetic analysis of pollen characters	Doyle et al. (2008)	113	Biostratigraphy

<sup>1</sup>Node labels indicate calibration placements in Figs. S20, S21.

<sup>2</sup>References for justification source listed in Iles et al. (2015).