Complete Generic Level Phylogenies of Palms (Arecaceae) with Comparisons of Supertree and Supermatrix Approaches

William J. Baker, Vincent Savolainen, Conny B. Asmussen-Lange, Mark W. Chase, John Dransfield, Félix Forest, Madeline M. Harley, Natalie W. Uhl and Mark Wilkinson

Online Appendices
Online Appendix 1. Genbank accession numbers for all sequences included in the supermatrix. Asterisks indicate the longer fragments of *ms* obtained by Lewis and Doyle (2001).

<table>
<thead>
<tr>
<th>Genus</th>
<th>18S</th>
<th>atpB</th>
<th>ITS</th>
<th>matK</th>
<th>ms</th>
<th>ndhF</th>
<th>prk</th>
<th>rbcL</th>
<th>rpb2</th>
<th>rps16</th>
<th>trnD-trnF</th>
<th>trnL-trnF</th>
<th>trnQ-rps16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acanthophoenix</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AM114691</td>
<td>AF249918*</td>
<td></td>
<td>AF453329</td>
<td>AM110234</td>
<td>AJ830020</td>
<td>AM116836</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Acoelorrhaphe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AM114579</td>
<td></td>
<td></td>
<td>AM110197</td>
<td></td>
<td>AM116782</td>
<td>-</td>
<td></td>
<td>AM113627</td>
</tr>
<tr>
<td>Acrocomia</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>AM114639</td>
<td></td>
<td></td>
<td>AJ831344</td>
<td>AM110212</td>
<td>AJ830151</td>
<td>AM116804</td>
<td>AM044506</td>
<td>AM113648</td>
</tr>
<tr>
<td>Actinokentia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AM114661</td>
<td></td>
<td></td>
<td>AJ831222</td>
<td>AM110221</td>
<td>AJ830023</td>
<td>AM116815</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Actinorhitis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AM114659</td>
<td>AF455571</td>
<td></td>
<td>AF453330</td>
<td>AJ829847</td>
<td>AJ830024</td>
<td>AM116814</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Adonidia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AM114660</td>
<td></td>
<td></td>
<td>AJ831224</td>
<td>AJ829848</td>
<td>AJ830193</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Aiphanes</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>AM114641</td>
<td></td>
<td></td>
<td>AM044556</td>
<td>AJ601207</td>
<td>AJ404831</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Allagoptera</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>AM114635</td>
<td>AF249919*</td>
<td>AF044564</td>
<td>AJ453331</td>
<td>AJ404828</td>
<td>AJ830152</td>
<td>AJ240902</td>
<td>AO044515</td>
<td>AJ241311</td>
</tr>
<tr>
<td>Alloschmidia</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td>AM114666</td>
<td></td>
<td></td>
<td>AJ831225</td>
<td>AJ829849</td>
<td>AJ830026</td>
<td>AM116817</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Alsmithia</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td>AM114711</td>
<td></td>
<td></td>
<td>AJ831226</td>
<td>AJ829850</td>
<td>AJ830027</td>
<td>AM116849</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Ammandra</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AM114611</td>
<td>AF249920*</td>
<td></td>
<td>-</td>
<td>-</td>
<td>AM116856</td>
<td>AM044555</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Aphandra</td>
<td>AF046632</td>
<td>AM114612</td>
<td></td>
<td>AM044532</td>
<td>AJ831345</td>
<td>AJ40837</td>
<td>AJ830153</td>
<td>AJ404954</td>
<td>AJ044483</td>
<td>AJ404921</td>
<td>AM044581</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Archontophoenix</td>
<td>-</td>
<td>AF449170</td>
<td>AM114660</td>
<td>AF449142</td>
<td>AJ831227</td>
<td>AJ40806</td>
<td>AJ830028</td>
<td>AJ044937</td>
<td>AJ49159</td>
<td>AM044914</td>
<td>-</td>
<td></td>
<td>AM044964</td>
</tr>
<tr>
<td>Areca</td>
<td>AOY12383</td>
<td>AYO12440</td>
<td>AM114664</td>
<td>AF455572</td>
<td>AOY4535</td>
<td>Y348907</td>
<td>AJ404819</td>
<td>Y543110</td>
<td>AJ049454</td>
<td>AO44486</td>
<td>AO49412</td>
<td>AO45484</td>
<td>AO4584</td>
</tr>
<tr>
<td>Arenga</td>
<td>AOY12364</td>
<td>AOY12421</td>
<td>AM114592</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>AJ404788</td>
<td>AJ240882</td>
<td>AJ241291</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Asterogyne</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td>AM114654</td>
<td>AF249922*</td>
<td>-</td>
<td>AF453334</td>
<td>AJ404833</td>
<td>AJ830154</td>
<td>AJ240905</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Astrocarium</td>
<td>AOY12396</td>
<td>AYO12453</td>
<td></td>
<td>-</td>
<td>-</td>
<td>AYO44557</td>
<td>AYO601227</td>
<td>AYO12510</td>
<td>-</td>
<td>-</td>
<td>AYO44508</td>
<td>-</td>
<td>AYO44604</td>
</tr>
<tr>
<td>Attalea</td>
<td>AYO12394</td>
<td>AYO12451</td>
<td>AM114636</td>
<td></td>
<td>AYO44570</td>
<td>AJ838146</td>
<td>AJ404829</td>
<td>AJ830207</td>
<td>AJ240903</td>
<td>AO45421</td>
<td>AJ241312</td>
<td>AO44617</td>
<td></td>
</tr>
<tr>
<td>Bactris</td>
<td>AYO44464</td>
<td>AM114642</td>
<td>AF249935</td>
<td>AYO44558</td>
<td>AYO61214</td>
<td>AM110214</td>
<td>-</td>
<td>AM116806</td>
<td>AO44509</td>
<td>AM113650</td>
<td>AO44605</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Balaka</td>
<td>AYO12379</td>
<td>AYO12436</td>
<td>AM114695</td>
<td>AF249936</td>
<td>AJ831228</td>
<td>AJ40814</td>
<td>AJ830194</td>
<td>AJ240896</td>
<td>-</td>
<td>-</td>
<td>AJ241305</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Barcella</td>
<td>AYO44467</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>AYO4561</td>
<td>-</td>
<td>AYO4630</td>
<td>-</td>
<td>AYO44512</td>
<td>-</td>
<td></td>
<td>AYO44608</td>
</tr>
<tr>
<td>Genus</td>
<td>Accession Numbers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chuniophoenix</td>
<td>AM114587, AJ404764, AJ240860, AJ241269</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinosperma</td>
<td>AM114680, AJ831261, AJ829861, AJ830057, AM116831, AM113674</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinostigma</td>
<td>AF449171, AM114706, AF449145, AJ831263, AM110240, AM116845, AF449162, AM113688, AF449148</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coccothrinax</td>
<td>AM114558, AJ404751, AJ240848, AJ241257</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocos</td>
<td>AY012393, AY012450, AM114637, AJ831261, AM110211, AM116803, AY044517, AM113647, AY044613</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colpothrinax</td>
<td>AM114581, AM114582, AF249944, AM114595, AJ404761, AJ240858, AJ241267</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copernia</td>
<td>AM114563, AM114566, AJ831264, AJ829862, AM110261, AM116827, AM113670</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocos</td>
<td>AM114676, AM114669, AJ831266, AJ829864, AJ830060, AM116827, AM113670</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyphosperma</td>
<td>AM114707, AF249947, AF453341, AJ404810, AJ404940, AF449163, AM114007, AF449149</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyrtostachys</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daemonorops</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deckenia</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dictyocaryum</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dictyosperma</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dransfieldia</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drymophloeus</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elaeis</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eleiodoxa</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eremosophtha</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eugeissona</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euterpe</td>
<td>AM114643, AM114646, AM114616, AM114708, AF249949, AM114709, AJ831326, AJ829868, AM110215, AM116801, AY044559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genus</td>
<td>Accession</td>
<td>Accession</td>
<td>Accession</td>
<td>Accession</td>
<td>Accession</td>
<td>Accession</td>
<td>Accession</td>
<td>Accession</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastrococos</td>
<td>AY044466</td>
<td>AM114646</td>
<td>AY044560</td>
<td>AY601225</td>
<td>AM110213</td>
<td>AM116805</td>
<td>AM044511</td>
<td>AM113649</td>
<td>AY044607</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gausia</td>
<td>-</td>
<td>AM114624</td>
<td>AF455576</td>
<td>-</td>
<td>AF453348</td>
<td>AJ404784</td>
<td>AJ830165</td>
<td>AJ240878</td>
<td>AJ241287</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geonoma</td>
<td>AF406631</td>
<td>AY044460</td>
<td>AM114655</td>
<td>AY044539</td>
<td>AJ831354</td>
<td>AM110219</td>
<td>AJ830210</td>
<td>AJ240906</td>
<td>AJ044490</td>
<td>AJ241315</td>
<td>AY044688</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaihaia</td>
<td>-</td>
<td>AM114569</td>
<td>-</td>
<td>-</td>
<td>AJ404755</td>
<td>AJ240852</td>
<td>AJ241261</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hedyscepe</td>
<td>-</td>
<td>AM114702</td>
<td>-</td>
<td>AJ971822</td>
<td>AJ404807</td>
<td>AJ971833</td>
<td>AJ404938</td>
<td>AJ404905</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemithrinax</td>
<td>-</td>
<td>AM114559</td>
<td>-</td>
<td>AJ829869</td>
<td>AM116772</td>
<td>AM113620</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterospathe</td>
<td>-</td>
<td>AM114710</td>
<td>AF249953</td>
<td>AJ831279</td>
<td>AM110243</td>
<td>AJ830084</td>
<td>AM116848</td>
<td>AM113691</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Howea</td>
<td>AY012378</td>
<td>AY012435</td>
<td>-</td>
<td>AF453472</td>
<td>AJ831294</td>
<td>AY012492</td>
<td>AJ830098</td>
<td>AF449165</td>
<td>AF449151</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydriastele</td>
<td>AY012390</td>
<td>AY012447</td>
<td>AM114712</td>
<td>AF455577</td>
<td>AF453473</td>
<td>AY348932</td>
<td>AJ404817</td>
<td>AY543136</td>
<td>AJ404943</td>
<td>AF449166</td>
<td>AJ404910</td>
<td>AY449152</td>
<td></td>
</tr>
<tr>
<td>Hyophorbe</td>
<td>AY012362</td>
<td>AY012419</td>
<td>AM114620</td>
<td>AF249923</td>
<td>AY044542</td>
<td>AF453351</td>
<td>AJ404785</td>
<td>AJ830168</td>
<td>AJ240879</td>
<td>AY044493</td>
<td>AJ241288</td>
<td>AY044589</td>
<td></td>
</tr>
<tr>
<td>Hyospathe</td>
<td>-</td>
<td>AM114646</td>
<td>-</td>
<td>AJ404804</td>
<td>AJ240891</td>
<td>AJ241300</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyphaene</td>
<td>AY012356</td>
<td>AY012413</td>
<td>AM114599</td>
<td>-</td>
<td>AJ404770</td>
<td>AJ240865</td>
<td>AJ241274</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iguanura</td>
<td>-</td>
<td>AM114714</td>
<td>AF249954</td>
<td>AF453352</td>
<td>AJ404820</td>
<td>AY543099</td>
<td>AJ404946</td>
<td>AJ404913</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iriartea</td>
<td>AF168854</td>
<td>AF233084</td>
<td>AM114617</td>
<td>AY044545</td>
<td>AJ404793</td>
<td>AJ240885</td>
<td>AY044496</td>
<td>AJ241294</td>
<td>AY044592</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iriartella</td>
<td>-</td>
<td>AM114615</td>
<td>-</td>
<td>-</td>
<td>AM110203</td>
<td>AM116795</td>
<td>AM113639</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Itaya</td>
<td>-</td>
<td>AM114564</td>
<td>-</td>
<td>AJ404748</td>
<td>AJ404923</td>
<td>AJ404890</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johannesteijmannia</td>
<td>-</td>
<td>AM114576</td>
<td>-</td>
<td>AJ404758</td>
<td>AJ240855</td>
<td>AJ241264</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juania</td>
<td>-</td>
<td>AM114608</td>
<td>-</td>
<td>AJ829874</td>
<td>AM116794</td>
<td>AM113638</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jubaea</td>
<td>-</td>
<td>AM114633</td>
<td>-</td>
<td>AY601255</td>
<td>AJ829875</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jubaeopsis</td>
<td>-</td>
<td>AM114633</td>
<td>-</td>
<td>AY601272</td>
<td>AJ829876</td>
<td>AM116801</td>
<td>AM113645</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kentiopsis</td>
<td>AY012376</td>
<td>AY012433</td>
<td>AM114663</td>
<td>AF249924</td>
<td>AF453353</td>
<td>AJ404809</td>
<td>AY543100</td>
<td>AJ240892</td>
<td>AJ241788</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korthalsia</td>
<td>-</td>
<td>AJ242101</td>
<td>AM114546</td>
<td>-</td>
<td>AM110188</td>
<td>AJ242175</td>
<td>AM113613</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laccospadix</td>
<td>-</td>
<td>AM114689</td>
<td>-</td>
<td>AJ831300</td>
<td>AJ404812</td>
<td>AJ830108</td>
<td>AJ240895</td>
<td>AJ241304</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laccosperma</td>
<td>-</td>
<td>AJ242122</td>
<td>AM114543</td>
<td>-</td>
<td>AJ404772</td>
<td>AJ240867</td>
<td>AJ241276</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latania</td>
<td>-</td>
<td>AM114601</td>
<td>-</td>
<td>AF829878</td>
<td>AM116792</td>
<td>AM113636</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genus</td>
<td>Accession Numbers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lavoixia</td>
<td>AM114678, AJ831302, AJ829879, AJ830110, AM116829, AM113672</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemurophoenix</td>
<td>AM114682, AF455579, AF453354, AM110229, AJ830112, AJ404935, AJ404902</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leopoldinia</td>
<td>AY012370, AY012427, AM114656, AF455580, AF453355, AJ404798, AJ404932, AJ404898</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lepidorrhachis</td>
<td>AM114715, AJ830119, AM116773, AM113621</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leucothrinax</td>
<td>AM114560, AM114716, AJ348942, AJ829882, AY543151, AM116851, AM113694</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linospadix</td>
<td>AF449172, AM114688, AF449144, AJ831305, AJ404811, AJ830119, AJ404941, AF49167</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livistona</td>
<td>AY012349, AY012406, AM114574, AY044528, AJ404757, AJ240854, AY44479, AJ241263</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loxococcus</td>
<td>AM114716, AY438942, AJ829882, AY543151, AM116851, AM113694</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lytocaryum</td>
<td>AY044470, AM114688, AF449144, AJ831305, AJ404811, AY601249, AY444633, AY44518</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manicaria</td>
<td>AY012369, AY012426, AM114645, AF455582, AY044548, AF453358, AJ404797, AJ830173</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marojejya</td>
<td>AM114684, AF455583, AF453359, AM110230, AJ830121, AM116832, AM113675</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maurititia</td>
<td>AY012359, AY012416, AJ242141, AM114545, AF249925, AY044524, AJ404777, AJ240872</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maxburretia</td>
<td>AM114572, AM114600, AJ829884, AM116779, AM113624</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medemia</td>
<td>AM114600, AM114600, AM114600, AM114600, AJ829885, AM116791, AM113635</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metroxylon</td>
<td>AF168860, AF233086, AJ242107, AM114548, AF249926, AM110190, AM116769, AM113615</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moratia</td>
<td>AM114677, AJ831318, AJ830128, AJ830129, AM116828, AM113671</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nannorrhops</td>
<td>AM114589, AM114656, AF455585, AY348914, AJ404818, AY543154, AM404944, AJ404911</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Nephroserma - - - - - AF455586 - AF453362 AJ829889 AJ830131 - - -
Normandy - - - - - AF455587 - AF453363 AJ829890 AJ830132 - - -
Oenocarpus - AY044461 - - - AY044552 - AY044624 - - AY044503 - AY044599
Onocalamus - AY242126 AM114541 - - - AJ831359 AJ404782 AJ830177 AJ240876 - AJ241285 -
Oncosperma AY012391 AY012448 - AM114690 AF455588 AF453474 AF453364 AM110233 AJ830134 AM116835 AF449155 AM113678 AF449154
Orania AY012368 AY012425 - AM114627 AF249928* AY044549 AF453365 AJ404796 AJ830175 AJ240887 AY044500 AJ241296 AY044596
Oraniopsis - - AM114609 - - AJ831321 AJ829892 AJ830135 AM116812 - AM113656 -
Parajubaea - - - - - - - AY601264 AJ829891 - - - -
Pelagodoxa - - - AM114657 AF455590 - AJ831321 AJ829892 AJ830135 AM116812 - AM113656 -
Phoenicophorium - - - AM114703 AF249956 - AF453368 AM110237 AJ830136 AM116843 - AM113686 -
Phoenix AY012354 AY012411 - AM114565 AF249929* AY044529 - AJ404767 - AJ240863 AY044480 AJ241272 AY044578
Pholidocarpus - - - AM114577 - - - - AJ829894 - AM116780 - AM113625 -
Pholidostachys - - - AM114651 - - - AJ831360 AM110217 AJ830211 AM116810 - AM113654 -
Physokentia - - - AM114671 AF455591 - AJ831322 AJ829896 AJ830138 AM116822 - AM113665 -
Roystonea AY012374 AY012431 - AM114630 AF455595 AY044554 AJ831372 AJ404805 AJ830184 AJ404936 AY044503 AY044601
Sabal AY012353 AY012410 - AM114553 AF249931* - - AJ404766 - AJ240862 - AJ241271 -
Salacca AY012358 AY012415 AJ242095 AM114547 - - - AM110189 - AJ242176 - AM113614 -
Satakentia - - - AM114674 AF455596 - AF453376 AM110227 AJ830146 AM116825 - AM113668 -
Phyttelephas AY012398 AY012455 - AM114613 - AY044533 AJ831361 AJ404835 AJ830178 AJ240908 AY044484 AJ241317 AY044582
Pigafetta - - AJ242112 AM114549 AF249957 - - AJ829897 - AJ242171 - AM113616 -
Pinaçu - - - - - - - - - - - -
Plectocomia - - AJ242087 AM114550 AF249930* - - AJ829899 - AJ242168 - AM113617 -
Plectocomiopsis - - AJ242089 - - - - AJ829900 - AJ242170 - - -
Podococcus AF168870 AF233086 - AM114625 AF455592 AY004450 AF453370 AM110207 AJ830180 AJ240886 AY044501 AJ241295 AY044597
Pogonotium - - AJ242076 - - - AJ829901 - AJ242163 - - -
<table>
<thead>
<tr>
<th>Genus</th>
<th>Accession Numbers</th>
<th>Accession Numbers</th>
<th>Accession Numbers</th>
<th>Accession Numbers</th>
<th>Accession Numbers</th>
<th>Accession Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyandrococos</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ponapea</td>
<td>AM114694</td>
<td>AM114648</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Prestoea</td>
<td>AY012373</td>
<td>AY012430</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pritchardia</td>
<td>AM114583</td>
<td>AM114578</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pritchardiospis</td>
<td>AY012350</td>
<td>AY012407</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pseudophoenix</td>
<td>AY012360</td>
<td>AY012417</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ptychococcus</td>
<td>AM114700</td>
<td>AM114606</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ptychosperma</td>
<td>AY012381</td>
<td>AY012438</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Raphia</td>
<td>-</td>
<td>AM114544</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ravenna</td>
<td>AY012361</td>
<td>AY012418</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Reinhardtiopsis</td>
<td>AY012371</td>
<td>AY012428</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Retispatha</td>
<td>-</td>
<td>AJ242081</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rhapidophyllum</td>
<td>-</td>
<td>AM114571</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rhapis</td>
<td>AY012344</td>
<td>AY012401</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rhopaloblaste</td>
<td>-</td>
<td>AM114717</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rhopalostylis</td>
<td>-</td>
<td>AM114701</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Roscheria</td>
<td>-</td>
<td>AM114704</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Satranala</td>
<td>-</td>
<td>AM114598</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Schippia</td>
<td>-</td>
<td>AM114555</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sclerosperma</td>
<td>-</td>
<td>AM114629</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Serenoa</td>
<td>-</td>
<td>AM114585</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Socratea</td>
<td>AY012366</td>
<td>AY012423</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Solfia</td>
<td>-</td>
<td>AM114658</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Somnieria</td>
<td>-</td>
<td>AY044471</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Syagrus</td>
<td>AY044451</td>
<td>AM114638</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Synechanthus</td>
<td>-</td>
<td>AM114622</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Taxon</td>
<td>Accession1</td>
<td>Accession2</td>
<td>Accession3</td>
<td>Accession4</td>
<td>Accession5</td>
<td>Accession6</td>
</tr>
<tr>
<td>---------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>Tectiphiala</td>
<td>AM114692</td>
<td>AF249965</td>
<td>AF453380</td>
<td>AJ829914</td>
<td>AJ830148</td>
<td>AM116837</td>
</tr>
<tr>
<td>Thrinax</td>
<td>AY012345</td>
<td>AY012402</td>
<td>AM114561</td>
<td>AY044526</td>
<td>AJ404750</td>
<td>AM116774</td>
</tr>
<tr>
<td>Trachycarpus</td>
<td>AY012346</td>
<td>AY012403</td>
<td>AM114570</td>
<td>-</td>
<td>AJ404752</td>
<td>AY044925</td>
</tr>
<tr>
<td>Trithrinax</td>
<td>AY012347</td>
<td>AY012404</td>
<td>AM114556</td>
<td>-</td>
<td>AJ404745</td>
<td>AJ240844</td>
</tr>
<tr>
<td>Veillonia</td>
<td>-</td>
<td>-</td>
<td>AM114672</td>
<td>-</td>
<td>AJ831338</td>
<td>AM110226</td>
</tr>
<tr>
<td>Veitchia</td>
<td>AY012382</td>
<td>AY012439</td>
<td>AM114696</td>
<td>-</td>
<td>AJ831342</td>
<td>AM110242</td>
</tr>
<tr>
<td>Verschaffeltia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>AF455599</td>
<td>AM110261</td>
<td>AM110216</td>
</tr>
<tr>
<td>Voanioala</td>
<td>-</td>
<td>AY044472</td>
<td>AM114634</td>
<td>AY044569</td>
<td>AY601266</td>
<td>AM110210</td>
</tr>
<tr>
<td>Wallichia</td>
<td>-</td>
<td>-</td>
<td>AM114594</td>
<td>AF249933</td>
<td>-</td>
<td>AJ404792</td>
</tr>
<tr>
<td>Washingtonia</td>
<td>AY012351</td>
<td>AY012408</td>
<td>AM114586</td>
<td>AY044527</td>
<td>-</td>
<td>AM110201</td>
</tr>
<tr>
<td>Welfia</td>
<td>-</td>
<td>-</td>
<td>AM114650</td>
<td>AF455600</td>
<td>AY772771</td>
<td>AJ82917</td>
</tr>
<tr>
<td>Wendlandiella</td>
<td>AY012363</td>
<td>AY012420</td>
<td>AM114621</td>
<td>AY044541</td>
<td>AJ831353</td>
<td>AM110206</td>
</tr>
<tr>
<td>Wettinia</td>
<td>AY012367</td>
<td>AY012424</td>
<td>AM114619</td>
<td>AF249934</td>
<td>AY044546</td>
<td>AJ831373</td>
</tr>
<tr>
<td>Wodyetia</td>
<td>-</td>
<td>-</td>
<td>AM114698</td>
<td>-</td>
<td>AJ831343</td>
<td>AM110236</td>
</tr>
<tr>
<td>Zomba</td>
<td>-</td>
<td>-</td>
<td>AM114557</td>
<td>-</td>
<td>-</td>
<td>AM110192</td>
</tr>
</tbody>
</table>

**Outgroups**

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Accession1</th>
<th>Accession2</th>
<th>Accession3</th>
<th>Accession4</th>
<th>Accession5</th>
<th>Accession6</th>
<th>Accession7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anigozanthos</td>
<td>AF069214</td>
<td>AF387600</td>
<td>AM114721</td>
<td>AF249921</td>
<td>AF546994</td>
<td>AM110248</td>
<td>AM116856</td>
</tr>
<tr>
<td>Calectasia</td>
<td>AF069209</td>
<td>AF168891</td>
<td>-</td>
<td>-</td>
<td>AY191208</td>
<td>AF206743</td>
<td>-</td>
</tr>
<tr>
<td>Catopsis</td>
<td>-</td>
<td>-</td>
<td>AY614026</td>
<td>AF249941</td>
<td>L75855</td>
<td>L19976</td>
<td>AF537875</td>
</tr>
<tr>
<td>Costus</td>
<td>AF069222</td>
<td>AF168898</td>
<td>AF478907</td>
<td>AF249945</td>
<td>AY191215</td>
<td>AF243510</td>
<td>-</td>
</tr>
<tr>
<td>Dasypogon</td>
<td>AJ417898</td>
<td>AF168907</td>
<td>AM114719</td>
<td>AY191209</td>
<td>AM110246</td>
<td>AM116854</td>
<td>AM113697</td>
</tr>
<tr>
<td>Fargesia</td>
<td>-</td>
<td>-</td>
<td>AM114722</td>
<td>-</td>
<td>AM110249</td>
<td>AM116857</td>
<td>AM113700</td>
</tr>
<tr>
<td>Hanguana</td>
<td>AF387604</td>
<td>AF387602</td>
<td>AM114720</td>
<td>AY007654</td>
<td>AM110247</td>
<td>AM116855</td>
<td>AM113698</td>
</tr>
<tr>
<td>Kingia</td>
<td>-</td>
<td>-</td>
<td>AM114718</td>
<td>-</td>
<td>AM110245</td>
<td>AM116853</td>
<td>AM113696</td>
</tr>
<tr>
<td>Musa</td>
<td>U42083</td>
<td>AF168931</td>
<td>AM114725</td>
<td>AY191219</td>
<td>AM110252</td>
<td>AM116860</td>
<td>AM113703</td>
</tr>
<tr>
<td>Genera</td>
<td>Accession Numbers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tradescantia</td>
<td>AF069213  AF168950 - AM114727 - AY624124 - AM110254 - AM116862 - AM113705 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typha</td>
<td>AF168880  AF168891 - AM114723  AF249966  TLU79230 - AM110250 - AM116858 - AM113701 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vriesia</td>
<td>- - - AM114726 - - - AM110253 - AM116861 - AM113704 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zea</td>
<td>AF168884  NC001666 - NC001666  L35914*  NC001666 - NC001666 - NC001666 - NC001666 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Online Appendix 2. Characters and character states for the morphology data partition. The dataset is available from [http://systematicbiology.org](http://systematicbiology.org), [http://eunops.org/en/content/palm-supertree](http://eunops.org/en/content/palm-supertree) or from the first author on request.

1. **Dichotomous branching**
   - 0: absent
   - 1: present

2. **Leaf shape**
   - 0: palmate
   - 1: pinnate including bipinnate

3. **Leaf sheath**
   - 0: gradually splitting toward the base
   - 1: remaining tubular for at least 75% length until leaf abscission or marcescence

4. **Leaf sheath**
   - 0: without abscission zone
   - 1: sheath with a clearly defined vertical abscission zone

5. **Leaf sheath**
   - 0: not disintegrating into fibers
   - 1: disintegrating into fibers

6. **Leaf sheath**
   - 0: fibres not spine like
   - 1: spine like

7. **Leaf sheath extension**
   - 0: absent
   - 1: present
   - 2: ligule-like
   - 3: oppositipetiolar

8. **Stilt roots**
   - 0: absent
   - 1: present

9. **Emergent spines**
   - 0: absent
   - 1: present on foliar organs only
2: on foliar organs and stems

10. Root spines
   0: absent
   1: present

11. Petiolar teeth
   0: absent
   1: present

12. Petiole split at base
   0: absent
   1: present

13. Adaxial hastula
   0: absent
   1: present

14. Primary leaf splitting
   0: adaxial
   1: adaxial with haut
   2: abaxial
   3: absent

15. Secondary splits
   0: occurring between the folds
   1: along abaxial folds

16. Lamina with central abaxial fold deeply split
   0: absent
   1: present

17. Leaflets
   0: entire
   1: leaflets praemorse with respect to single folds

18. Phloem strands in petiole
   0: one
   1: two

19. Lamina anatomy
   0: dorsiventral
   1: isolateral

20. Silica bodies
0: spherical
1: hat shaped

21. Resin gum canals
   0: absent
   1: present

22. Guard cells
   0: outer walls not thickened
   1: thickened

23. Flowering
   0: pleonanthic
   1: acropetal hapaxanthic
   2: basipetal hapaxanthic

24. Prophyll
   0: complete
   1: incomplete

25. Prophyll
   0: shorter than peduncular bract
   1: more or less the same length or longer

26. Rachillae
   0: all of the same order
   1: of different orders

27. Prophyll tip
   0: beaked
   1: rounded
   2: U shaped

28. Prophyll split with respect to main axis
   0: abaxially
   1: adaxially
   2: marginally
   3: apically

29. Peduncular bracts
   0: five to seven
   1: four
   2: three
3: two
4: one
5: absent

30. Peduncle
   0: much longer than the rachis
   1: about the same length
   2: shorter than the rachis

31. Rachis bracts
   0: similar to peduncular bract and prophyll
   1: much smaller than peduncular bract and prophyll

32. Inflorescence branching
   0: spicate
   1: branched to one order
   2: branched to two or more orders

33. Inflorescence branches
   0: arranged more or less distichously
   1: radially

34. First order branches
   0: basal conspicuously longer than the rest
   1: same length throughout
   2: basal ones shorter

35. Inflorescence branches
   0: lacking flowers basally
   1: with flowers to their insertions

36. Rachillae
   0: not pendulous
   1: pendulous

37. Rachillae
   0: shorter than the rachis
   1: longer than the rachis

38. Rachilla bracts
   0: not tubular
   1: tubular

39. Flowers
0: superficial
1: sunken in pits

40. Cincinnus
0: simple
1: acervulus
2: triad
3: dyad
4: absent (flowers solitary)

41. Flowers or flower clusters
0: spiral
1: distichous
2: decussate

42. Flowers
0: closed in bud
1: open precociously

43. Flower sex
0: Bisexual only
1: Bisexual and Unisexual
2: Unisexual only

44. Sexual expression
0: monoecy or polygamomonoecy
1: dioecy or polygamodioecy

45. Staminate and pistillate flowers
0: not dimorphic
1: dimorphic

46. Perianth
0: trimerous
1: greater than trimerous

47. Perianth
0: tepals
1: sepals and petals

48. Perianth
0: not a cupule
1: cupule
49. Pedicelliform corolla
   0: absent
   1: present

50. Hermaphrodite flower sepals
   0: distinct
   1: connate

51. Hermaphrodite flower sepals
   0: imbricate
   1: valvate

52. Hermaphrodite flower petals
   0: distinct
   1: connate

53. Hermaphrodite flower petals
   0: imbricate
   1: valvate

54. Staminate flower sepals
   0: distinct
   1: connate

55. Staminate flower sepals
   0: imbricate
   1: valvate

56. Staminate flower petals
   0: distinct
   1: connate

57. Staminate flower petals
   0: imbricate
   1: valvate

58. Pistillate flower sepals
   0: distinct
   1: connate

59. Pistillate flower sepals
   0: imbricate
   1: valvate

60. Pistillate flower petals
0: distinct
1: connate

61. Pistillate flower petals
   0: imbricate
   1: valvate

62. Stamens
   0: three
   1: six
   2: more than six

63. Stamen filaments
   0: straight
   1: inflexed

64. Stamen filaments
   0: of equal length
   1: of two lengths

65. Stamen filaments
   0: distinct
   1: connate in a ring

66. Stamens
   0: free
   1: adnate to corolla

67. Anthers
   0: elongate
   1: rounded

68. Connective
   0: not projecting
   1: projecting

69. Pollen aperture number
   0: none
   1: one
   2: two
   3: three

70. Aperture position
   0: polar
1: equatorial or subequatorial
2: meridional

71. Aperture type
   0: sulcate including extended sulcate, brevisulcate and trichotomosulcate
   1: porate
   2: zonosulcate including incomplete zonosulcate

72. Sulcate grains
   0: trichotomosulcate grains absent
   1: trichotomosulcate grains present in part
   2: trichotomosulcate grains exclusively present

73. Pollen shape
   0: spheroidal
   1: ellipsoidal
   2: oblate spheroidal
   3: oblate rounded triangular

74. Tectum
   0: tectate including semi tectate
   1: intectate

75. Symmetry
   0: at least one plane of symmetry
   1: without symmetry

76. Supratectate processes
   0: absent
   1: present

77. Intectate processes
   0: absent
   1: present

78. Pistillode
   0: gynoeiciform
   1: trifid
   2: pyramidal
   3: capitate
   4: attenuate
   5: lageniform
79. Staminodes
   0: absent
   1: present

80. Staminodes
   0: distinct
   1: in a ring

81. Staminodes
   0: not adnate to corolla
   1: adnate to corolla

82. Staminodes
   0: sterile anthers present
   1: sterile anthers absent

83. Carpels
   0: one
   1: three
   2: more than three

84. Carpels
   0: distinct
   1: connate basally
   2: connate throughout
   3: connate by styles only

85. Carpels
   0: not pseudomonomerous
   1: pseudomonomerous

86. Ovule attachment
   0: basal
   1: lateral
   2: pendulous

87. Ovules
   0: anatropous
   1: hemianatropous
   2: campylotropous
   3: orthotropous

88. Ovules
0: micropyles not towards center
1: with micropyles toward center of gynoecium

89. Pericarp
   0: lacking scales
   1: with scales

90. Pericarp
   0: corky warts absent
   1: corky warts present

91. Endocarp externally
   0: smooth
   1: sculptured

92. Endocarp internally
   0: smooth
   1: sculptured

93. Endocarp
   0: continuous
   1: endocarp discontinuous i.e. with pore or operculum

94. Endocarp pores
   0: basal
   1: lateral
   2: apical

95. Endocarp
   0: lacking basal button
   1: with basal button

96. Pyrenes
   0: absent
   1: present

97. Stigmatic remains
   0: apical or subapical
   1: lateral and basal

98. Seed attached
   0: basally
   1: laterally

99. Seed coat penetration (postament)
0: absent
1: present

100. Endosperm
  0: homogeneous
  1: ruminate

101. Embryo
  0: basal to subbasal
  1: lateral
  2: apical to subapical

102. Stamen development
  0: centripetal
  1: centrifugal

103. Germination
  0: adjacent ligular
  1: remote ligular
  2: remote tubular

104. Eophyll
  0: entire
  1: bifid
  2: palmate
  3: pinnate

105. Chromosome number n
  0: 18
  1: 17
  2: 16
  3: 15
  4: 14
  5: 13
  6: 12
Online Appendix 3. Semi-strict consensus tree of the supermatrix tree and the “most congruent” supertree. Values represent the frequency of occurrence of clades.