

**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).

Genus	18S	<i>atpB</i>	ITS	<i>matK</i>	<i>ms</i>	<i>ndhF</i>	<i>prk</i>	<i>rbcL</i>	<i>rpb2</i>	<i>rps16</i>	<i>trnD-trnT</i>	<i>trnL-trnF</i>	<i>trnQ-rps16</i>
<i>Acanthophoenix</i>	-	-	-	AM114691	AF249918*	-	AF453329	AM110234	AJ830020	AM116836	-	AM113679	-
<i>Acoelorrhapha</i>	-	-	-	AM114579	-	-	-	AM110197	-	AM116782	-	AM113627	-
<i>Acrocomia</i>	-	AY044462	-	AM114639	-	AY044555	AJ831344	AM110212	AJ830151	AM116804	AY044506	AM113648	AY044602
<i>Actinokentia</i>	-	-	-	AM114661	-	-	AJ831222	AM110221	AJ830023	AM116815	-	AM113659	-
<i>Actinorhynchus</i>	-	-	-	AM114659	AF455571	-	AF453330	AJ829847	AJ830024	AM116814	-	AM113658	-
<i>Adonidia</i>	-	-	-	-	-	-	AJ831224	AJ829848	AJ830193	-	-	-	-
<i>Aiphanes</i>	-	AY044463	-	AM114641	-	AY044556	AY601207	AJ404831	-	AJ404953	AY044507	AJ404920	AY044603
<i>Allagoptera</i>	-	AY044468	-	AM114635	AF249919*	AY044564	AF453331	AJ404828	AJ830152	AJ240902	AY044515	AJ241311	AY044611
<i>Alloschmidia</i>	-	-	-	AM114666	-	-	AJ831225	AJ829849	AJ830026	AM116817	-	AM113661	-
<i>Alsmithia</i>	-	-	-	AM114711	-	-	AJ831226	AJ829850	AJ830027	AM116849	-	AM113692	-
<i>Ammandra</i>	-	-	-	AM114611	AF249920*	-	AF453332	AJ404838	AY543096	AJ404955	-	AJ404922	-
<i>Aphandra</i>	AF406632	AY044458	-	AM114612	-	AY044532	AJ831345	AJ404837	AJ830153	AJ404954	AY044483	AJ404921	AY044581
<i>Archontophoenix</i>	-	AF449170	-	AM114660	-	AF449142	AJ831227	AJ404806	AJ830028	AJ404937	AF449159	AJ404904	AF449145
<i>Areca</i>	AY012383	AY012440	-	AM114664	AF455572	AY044535	AY348907	AJ404819	AY543110	AJ404945	AY044486	AJ404912	AY044584
<i>Arenga</i>	AY012364	AY012421	-	AM114592	-	-	-	AJ404788	-	AJ240882	-	AJ241291	-
<i>Asterogyne</i>	-	-	AJ242152	AM114654	AF249922*	-	AF453334	AJ404833	AJ830154	AJ240905	-	AJ241314	-
<i>Astrocaryum</i>	AY012396	AY012453	-	-	-	AY044557	AY601227	AY012510	-	-	AY044508	-	AY044604
<i>Attalea</i>	AY012394	AY012451	-	AM114636	-	AY044570	AJ831346	AJ404829	AJ830207	AJ240903	AY044521	AJ241312	AY044617
<i>Bactris</i>	-	AY044464	-	AM114642	AF249935	AY044558	AY601214	AM110214	-	AM116806	AY044509	AM113650	AY044605
<i>Balaka</i>	AY012379	AY012436	-	AM114695	AF249936	-	AJ831228	AJ404814	AJ830194	AJ240896	-	AJ241305	-
<i>Barcella</i>	-	AY044467	-	-	-	AY044561	-	AY044630	-	-	AY044512	-	AY044608

<i>Basselinia</i>	-	-	-	AM114667	-	-	AJ831231	AM110223	AJ830030	AM116818	-	AM113662	-
<i>Beccariophoenix</i>	AY012392	AY012449	-	AM114632	AF249937	AY044563	AF453335	AJ404826	AJ830155	AJ404951	AY044514	AJ404918	AY044610
<i>Bentinckia</i>	AY012385	AY012442	-	AM114705	AF249938	AF453468	AF453336	AM110239	AJ830032	AM116844	AF449160	AM113687	AF449146
<i>Bismarckia</i>	-	-	-	AM114597	-	-	-	AJ829852	-	AM116790	-	AM113634	-
<i>Borassodendron</i>	-	-	-	AM114603	-	-	-	AJ404768	-	AJ404927	-	AJ404894	-
<i>Borassus</i>	AY012355	AY012412	-	AM114604	-	AY044530	-	AM110202	-	AM116793	AY044481	AM113637	AY044579
<i>Brahea</i>	-	-	-	AM114580	-	-	-	AM110198	-	AM116783	-	AM113628	-
<i>Brassiophoenix</i>	-	-	-	AM114699	-	-	AJ831235	AJ404815	AJ830195	AJ240897	-	AJ241306	-
<i>Brongniartikentia</i>	-	-	-	AM114679	AF249939	-	AJ831236	AJ829854	AJ830033	AM116830	-	AM113673	-
<i>Burretiokentia</i>	AY012386	AY012443	-	-	-	AF453469	AJ831242	AY012500	AJ830037	-	AF449161	-	AF449147
<i>Butia</i>	-	AY044469	-	-	-	AY044565	AY601251	AY044632	-	-	AY044526	-	AY044612
<i>Calamus</i>	AF168828	AF233081	AJ242052	AM114551	-	AY044523	-	AJ404775	-	AJ240870	AY044474	AJ241279	AY04572
<i>Calospatha</i>	-	-	AJ242066	-	-	-	-	AJ829855	-	AJ242161	-	-	-
<i>Calyptrocalyx</i>	AY012387	AY012444	-	AM114687	-	-	AJ831244	AM110232	AJ830040	AM116834	-	AM113677	-
<i>Calyptrogyne</i>	-	-	-	AM114652	-	-	AJ831347	AM110218	AJ830208	AM116811	-	AM113655	-
<i>Calyptronoma</i>	AF406630	AY044459	-	AM114653	-	AY044538	AY772767	AJ404832	AY779367	AJ240904	AY044489	AJ241313	AY044587
<i>Campecarpus</i>	-	-	-	AM114668	-	-	AJ831258	AM110224	AJ830054	AM116819	-	AM113663	-
<i>Carpentaria</i>	-	-	-	AM114697	-	-	AJ831259	AJ829858	AJ830196	AM116840	-	AM113683	-
<i>Carpoxyton</i>	-	-	-	AM114673	AF455573	-	AF453337	AJ829859	AJ830055	AM116824	-	AM113667	-
<i>Caryota</i>	AF168831	AF233082	-	AM114590	AF249940	AY044531	AF453338	AJ404790	AJ830156	AJ240883	AY044482	AJ241292	AY044580
<i>Ceratolobus</i>	-	-	AJ242068	-	-	-	-	AJ829860	-	AJ242162	-	-	-
<i>Ceroxylon</i>	-	-	AJ242150	AM114607	-	-	AJ831349	AJ404781	AJ830157	AJ240875	-	AJ241284	-
<i>Chamaedorea</i>	AF069209	AF233083	-	AM114623	AF249942	AY044540	AJ831352	AJ404787	AJ830166	AJ240881	AY044491	AJ241290	-
<i>Chamaerops</i>	AY012342	AY012399	-	AM114568	AF249943	-	AF453339	AJ404754	AY543097	AM116777	-	AJ241260	-
<i>Chambeyronia</i>	AY012375	AY012432	-	AM114662	-	AY044536	AJ831260	AM110222	AJ830056	AM116816	AY044487	AM113660	AY044585
<i>Chelyocarpus</i>	AY012343	AY012400	-	AM114562	-	-	-	AJ404746	-	AJ240845	-	AJ241254	-

<i>Chuniophoenix</i>	-	-	-	AM114587	-	-	-	AJ404764	-	AJ240860	-	AJ241269	-
<i>Clinosperma</i>	-	-	-	AM114680	-	-	AJ831261	AJ829861	AJ830057	AM116831	-	AM113674	-
<i>Clinostigma</i>	-	AF449171	-	AM114706	-	AF449145	AJ831263	AM110240	AJ830059	AM116845	AF449162	AM113688	AF449148
<i>Coccothrinax</i>	-	-	-	AM114558	-	-	-	AJ404751	-	AJ240848	-	AJ241257	-
<i>Cocos</i>	AY012393	AY012450	-	AM114637	-	AY044566	AY601232	AM110211	-	AM116803	AY044517	AM113647	AY044613
<i>Colpotherinax</i>	-	-	-	AM114581	-	-	-	AJ829862	-	AM116784	-	AM113629	-
<i>Copernicia</i>	-	-	-	AM114582	AF249944	-	-	AM110199	-	AM116785	-	AM113630	-
<i>Corypha</i>	AY012352	AY012409	-	AM114595	-	-	-	AJ404761	-	AJ240858	-	AJ241267	-
<i>Cryosophila</i>	-	-	-	AM114563	-	-	-	AJ404747	-	AJ240846	-	AJ241255	-
<i>Cyphokentia</i>	-	-	-	AM114676	-	-	AJ831264	AJ829864	AJ830060	AM116827	-	AM113670	-
<i>Cyphophoenix</i>	AY012388	AY012445	-	AM114669	-	-	AJ831266	AJ404821	AJ830061	AM116820	-	AJ241309	-
<i>Cyphosperma</i>	-	-	-	AM114670	AF249946	-	AF453340	AM110225	AY543098	AM116821	-	AM113664	-
<i>Cyrstostachys</i>	AY012377	AY012434	-	AM114707	AF249947	AF453470	AF453341	AJ404810	AJ830062	AJ404940	AF449163	AJ404907	AF449149
<i>Daemonorops</i>	-	-	AJ242070	-	-	-	-	AJ829866	-	AJ242165	-	-	-
<i>Deckenia</i>	-	-	-	-	AF249948	-	AF453342	AJ829867	AJ830063	-	-	-	-
<i>Desmoncus</i>	-	AY044465	-	AM114643	-	AY044559	AY601212	AM110215	-	AM116807	AY044510	AM113651	AY044606
<i>Dictyocaryum</i>	AY012365	AY012422	-	AM114616	-	-	-	AM110204	-	AM116796	-	AM113640	-
<i>Dictyosperma</i>	AY012389	AY012446	-	AM114708	AF249949	-	AF453343	AM110241	AJ830064	AM116846	-	AM113689	-
<i>Dransfieldia</i>	-	-	-	AM114709	-	-	AJ831326	AM110242	AJ830139	AM116847	-	AM113690	-
<i>Drymophloeus</i>	AY012380	AY012437	-	-	-	AY044537	AJ831267	AY012494	AJ830197	-	AY044488	-	AY044586
<i>Dypsis</i>	AY012372	AY012429	-	AM114681	AF249951	AY044534	AF453346	AJ404800	AJ830078	AJ404934	AY044485	AJ404901	AY044583
<i>Elaeis</i>	AY012395	AY012452	-	AM114644	-	AY044562	AJ831350	AJ404830	AJ830163	AJ404952	AY044513	AJ404919	AY044609
<i>Eleiodoxa</i>	-	-	AJ242092	-	-	-	-	AJ829868	-	AJ242179	-	-	-
<i>Eremospatha</i>	-	-	AJ242129	AM114542	-	-	AJ831351	AM117812	AJ830164	AJ240868	-	AJ241277	-
<i>Eugeissona</i>	-	-	AJ242116	AM114540	-	-	-	AJ404774	-	AJ240869	-	AJ241278	-
<i>Euterpe</i>	-	-	-	AM114647	AF249952	-	-	AJ404802	-	AJ240889	-	AJ241298	-

<i>Gastrococos</i>	-	AY044466	-	AM114640	-	AY044560	AY601225	AM110213	-	AM116805	AY044511	AM113649	AY044607
<i>Gaussia</i>	-	-	-	AM114624	AF455576	-	AF453348	AJ404784	AJ830165	AJ240878	-	AJ241287	-
<i>Geonoma</i>	AF406631	AY044460	-	AM114655	-	AY044539	AJ831354	AM110219	AJ830210	AJ240906	AY044490	AJ241315	AY044688
<i>Guihaia</i>	-	-	-	AM114569	-	-	-	AJ404755	-	AJ240852	-	AJ241261	-
<i>Hedyscepe</i>	-	-	-	AM114702	-	-	AJ971822	AJ404807	AJ971833	AJ404938	-	AJ404905	-
<i>Hemithrinax</i>	-	-	-	AM114559	-	-	-	AJ829869	-	AM116772	-	AM113620	-
<i>Heterospathe</i>	-	-	-	AM114710	AF249953	-	AJ831279	AM110243	AJ830084	AM116848	-	AM113691	-
<i>Howea</i>	AY012378	AY012435	-	-	-	AF453472	AJ831294	AY012492	AJ830098	-	AF449165	-	AF449151
<i>Hydriastele</i>	AY012390	AY012447	-	AM114712	AF455577	AF453473	AY348932	AJ404817	AY543136	AJ404943	AF449166	AJ404910	AF449152
<i>Hyophorbe</i>	AY012362	AY012419	-	AM114620	AF249923*	AY044542	AF453351	AJ404785	AJ830168	AJ240879	AY044493	AJ241288	AY044589
<i>Hyospathe</i>	-	-	-	AM114646	-	-	-	AJ404804	-	AJ240891	-	AJ241300	-
<i>Hyphaene</i>	AY012356	AY012413	-	AM114599	-	-	-	AJ404770	-	AJ240865	-	AJ241274	-
<i>Iguanura</i>	-	-	-	AM114714	AF249954	-	AF453352	AJ404820	AY543099	AJ404946	-	AJ404913	-
<i>Iriartea</i>	AF168854	AF233084	-	AM114617	-	AY044545	-	AJ404793	-	AJ240885	AY044496	AJ241294	AY044592
<i>Iriartella</i>	-	-	-	AM114615	-	-	-	AM110203	-	AM116795	-	AM113639	-
<i>Itaya</i>	-	-	-	AM114564	-	-	-	AJ404748	-	AJ404923	-	AJ404890	-
<i>Johannesteijsmannia</i>	-	-	-	AM114576	-	-	-	AJ404758	-	AJ240855	-	AJ241264	-
<i>Juania</i>	-	-	-	AM114608	-	-	-	AJ829874	-	AM116794	-	AM113638	-
<i>Jubaea</i>	-	-	-	-	-	-	AY601255	AJ829875	-	-	-	-	-
<i>Jubaeopsis</i>	-	-	-	AM114633	-	-	AY601272	AJ829876	-	AM116801	-	AM113645	-
<i>Kentiopsis</i>	AY012376	AY012433	-	AM114663	AF249924*	-	AF453353	AJ404809	AY543100	AJ240892	-	AJ241788	-
<i>Kerriodoxa</i>	-	-	AJ242148	AM114588	-	-	AJ831355	AJ404765	AJ830170	AJ240861	-	AJ241270	-
<i>Korthalsia</i>	-	-	AJ242101	AM114546	-	-	-	AM110188	-	AJ242175	-	AM113613	-
<i>Laccospadix</i>	-	-	-	AM114689	-	-	AJ831300	AJ404812	AJ830108	AJ240895	-	AJ241304	-
<i>Laccosperma</i>	-	-	AJ242122	AM114543	-	-	-	AJ404772	-	AJ240867	-	AJ241276	-
<i>Latania</i>	-	-	-	AM114601	-	-	-	AF829878	-	AM116792	-	AM113636	-

<i>Lavoixia</i>	-	-	-	AM114678	-	-	AJ831302	AJ829879	AJ830110	AM116829	-	AM113672	-
<i>Lemurophoenix</i>	-	-	-	AM114682	AF455579	-	AF453354	AM110229	AJ830112	AJ404935	-	AJ404902	-
<i>Leopoldinia</i>	AY012370	AY012427	-	AM114656	AF455580	AY044547	AF453355	AJ404798	AY543102	AJ404932	AY044498	AJ404899	AY044594
<i>Lepidocaryum</i>	-	-	AJ242140	-	-	-	-	AJ829880	-	AJ242182	-	-	-
<i>Lepidorrhachis</i>	-	-	-	AM114715	-	-	AJ831303	AJ829881	AJ830117	AM116850	-	AM113693	-
<i>Leucothrinax</i>	-	-	-	AM114560	-	-	-	AM110193	-	AM116773	-	AM113621	-
<i>Licuala</i>	AY012348	AY012405	-	AM114575	-	-	-	AJ404759	-	AJ240856	-	AJ241265	-
<i>Linospadix</i>	-	AF449172	-	AM114688	AF249955	AF449144	AJ831305	AJ404811	AJ830119	AJ404941	AF449167	AJ404908	AF449153
<i>Livistona</i>	AY012349	AY012406	-	AM114574	-	AY044528	-	AJ404757	-	AJ240854	AY044479	AJ241263	AY044577
<i>Lodoicea</i>	-	-	-	AM114602	AF455581	-	AF453357	AJ404769	AJ830171	AJ240864	-	AJ241273	-
<i>Loxococcus</i>	-	-	-	AM114716	-	-	AY348942	AJ829882	AY543151	AM116851	-	AM113694	-
<i>Lytocaryum</i>	-	AY044470	-	-	-	AY044567	AY601249	AY044633	-	-	AY044518	-	AY044614
<i>Manicaria</i>	AY012369	AY012426	-	AM114645	AF455582	AY044548	AF453358	AJ404797	AJ830173	AJ240888	AY044499	AJ241297	AY044595
<i>Marojejya</i>	-	-	-	AM114684	AF455583	-	AF453359	AM110230	AJ830121	AM116832	-	AM113675	-
<i>Masoala</i>	-	-	-	AM114685	AF455584	-	AF453360	AJ404824	AJ830128	AJ404949	-	AJ404916	-
<i>Mauritia</i>	AY012359	AY012416	AJ242141	AM114545	AF249925*	AY044524	-	AJ404777	-	AJ240872	AY044475	AJ241281	AY044573
<i>Mauritiella</i>	-	-	AJ242146	-	-	-	-	AJ829883	-	AJ242183	-	-	-
<i>Maxburretia</i>	-	-	-	AM114572	-	-	-	AJ829884	-	AM116779	-	AM113624	-
<i>Medemia</i>	-	-	-	AM114600	-	-	-	AJ829885	-	AM116791	-	AM113635	-
<i>Metroxylon</i>	AF168860	AF233086	AJ242107	AM114548	AF249926*	-	-	AM110190	-	AM116769	-	AM113615	-
<i>Moratia</i>	-	-	-	AM114677	-	-	AJ831318	AM110228	AJ830129	AM116828	-	AM113671	-
<i>Myrialepis</i>	-	-	AJ242083	-	-	-	-	AJ829887	-	AJ242169	-	-	-
<i>Nannorrhops</i>	-	-	-	AM114589	-	-	-	AJ404763	-	AJ240859	-	AJ241268	-
<i>Nenga</i>	-	-	-	AM114665	AF455585	-	AY348914	AJ404818	AY543154	AJ404944	-	AJ404911	-
<i>Neonicholsonia</i>	-	-	-	AM114649	-	-	AJ831356	AJ404803	AJ830172	AJ240890	-	AJ241299	-
<i>Neoveitchia</i>	-	-	-	AM114675	-	-	AJ831319	AJ829888	AJ830130	AM116826	-	AM113669	-

<i>Nephrosperma</i>	-	-	-	-	AF455586	-	AF453362	AJ829889	AJ830131	-	-	-	-
<i>Normanbya</i>	-	-	-	-	AF455587	-	AF453363	AJ829890	AJ830132	-	-	-	-
<i>Nypa</i>	AY012357	AY012414	-	AM114552	AF249927*	AY044525	AJ831357	AJ404778	AJ830174	AJ240873	AY044476	AJ241282	A044574
<i>Oenocarpus</i>	-	AY044461	-	-	-	AY044552	-	AY044624	-	-	AY044503	-	AY044599
<i>Oncocalamus</i>	-	-	AJ242126	AM114541	-	-	-	AJ404776	-	AJ240871	-	AJ241376	-
<i>Oncosperma</i>	AY012391	AY012448	-	AM114690	AF455588	AF453474	AF453364	AM110233	AJ830134	AM116835	AF449155	AM113678	AF449154
<i>Orania</i>	AY012368	AY012425	-	AM114627	AF249928*	AY044549	AF453365	AJ404796	AJ830175	AJ240887	AY044500	AJ241296	AY044596
<i>Oraniopsis</i>	-	-	-	AM114609	-	-	AJ831359	AJ404782	AJ830177	AJ240876	-	AJ241285	-
<i>Parajubaea</i>	-	-	-	-	-	-	AY601264	AJ829891	-	-	-	-	-
<i>Pelagodoxa</i>	-	-	-	AM114657	AF455590	-	AJ831321	AJ829892	AJ830135	AM116812	-	AM113656	-
<i>Phoenicophorium</i>	-	-	-	AM114703	AF249956	-	AF453368	AM110237	AJ830136	AM116843	-	AM113686	-
<i>Phoenix</i>	AY012354	AY012411	-	AM114565	AF249929*	AY044529	-	AJ404767	-	AJ240863	AY044480	AJ241272	AY044578
<i>Pholidocarpus</i>	-	-	-	AM114577	-	-	-	AJ829894	-	AM116780	-	AM113625	-
<i>Pholidostachys</i>	-	-	-	AM114651	-	-	AJ831360	AM110217	AJ830211	AM116810	-	AM113654	-
<i>Physokentia</i>	-	-	-	AM114671	AF455591	-	AJ831322	AJ829896	AJ830138	AM116822	-	AM113665	-
<i>Roystonea</i>	AY012374	AY012431	-	AM114630	AF455595	AY044554	AJ831372	AJ404805	AJ830184	AJ404936	AY044505	AJ404903	AY044601
<i>Sabal</i>	AY012353	AY012410	-	AM114553	AF249931*	-	-	AJ404766	-	AJ240862	-	AJ241271	-
<i>Salacca</i>	AY012358	AY012415	AJ242095	AM114547	-	-	-	AM110189	-	AJ242176	-	AM113614	-
<i>Satakentia</i>	-	-	-	AM114674	AF455596	-	AF453376	AM110227	AJ830146	AM116825	-	AM113668	-
<i>Phytelephas</i>	AY012398	AY012455	-	AM114613	-	AY044533	AJ831361	AJ404835	AJ830178	AJ240908	AY044484	AJ241317	AY044582
<i>Pigafetta</i>	-	-	AJ242112	AM114549	AF249957	-	-	AJ829897	-	AJ242171	-	AM113616	-
<i>Pinanga</i>	-	-	-	-	-	-	AY348944	AJ829898	AY543156	-	-	-	-
<i>Plectocomia</i>	-	-	AJ242087	AM114550	AF249930*	-	-	AJ829899	-	AJ242168	-	AM113617	-
<i>Plectocomiopsis</i>	-	-	AJ242089	-	-	-	-	AJ829900	-	AJ242170	-	-	-
<i>Podococcus</i>	AF168870	AF233086	-	AM114625	AF455592	AY004450	AF453370	AM110207	AJ830180	AJ240886	AY044501	AJ241295	AY044597
<i>Pogonotium</i>	-	-	AJ242076	-	-	-	-	AJ829901	-	AJ242163	-	-	-

<i>Polyandrococos</i>	-	-	-	-	-	-	AY601243	AJ829902	-	-	-	-	-
<i>Ponapea</i>	-	-	-	AM114694	-	-	AJ831328	AJ829903	AJ830203	AM116839	-	AM113682	-
<i>Prestoea</i>	AY012373	AY012430	-	AM114648	AF249958	AY044553	-	AM110216	-	AM116808	AY044504	AM113652	AY044600
<i>Pritchardia</i>	-	-	-	AM114583	-	-	-	AJ829905	-	AM116786	-	AM113631	-
<i>Pritchardiopsis</i>	AY012350	AY012407	-	AM114578	-	-	-	AM110196	-	AM116781	-	AM113626	-
<i>Pseudophoenix</i>	AY012360	AY012417	-	AM114606	AF249959	AY044543	AJ831363	AJ404780	AJ830181	AJ404928	AY044494	AJ404895	AY044590
<i>Ptychococcus</i>	-	-	-	AM114700	-	-	AJ831324	AJ829906	AJ830200	AM116842	-	AM113685	-
<i>Ptychosperma</i>	AY012381	AY012438	-	AM114693	AF249960	AF453475	AJ831325	AM110235	AJ830201	AM116838	AF449169	AM113681	AF449155
<i>Raphia</i>	-	-	AJ242131	AM114544	-	-	-	AJ829907	-	AJ242184	-	AM113612	-
<i>Ravenea</i>	AY012361	AY012418	-	AM114610	AF249961	AY044544	-	AJ404783	-	AJ240877	AY044495	AJ241286	AY044591
<i>Reinhardtia</i>	AY012371	AY012428	-	AM114631	AF249962	AY044551	AJ831371	AJ404799	AJ830183	AJ404933	AY044502	AJ404900	AY044598
<i>Retispatha</i>	-	-	AJ242081	-	-	-	-	AJ829908	-	AJ242166	-	-	-
<i>Rhapidophyllum</i>	-	-	-	AM114571	-	-	-	AJ404753	-	AM116778	-	AJ241259	-
<i>Rhapis</i>	AY012344	AY012401	-	AM114573	-	-	-	AJ404756	-	AJ240853	-	AJ241262	-
<i>Rhopaloblaste</i>	-	-	-	AM114717	AF249963	-	AJ831332	AM110244	AJ830143	AM116852	-	AM113695	-
<i>Rhopalostylis</i>	-	-	-	AM114701	AF249963	-	AJ831333	AJ404808	AJ830145	AJ404939	-	AJ404906	-
<i>Roscheria</i>	-	-	-	AM114704	AF455594	-	AF453374	AM110238	AJ830140	AJ404947	-	AJ404914	-
<i>Satranala</i>	-	-	-	AM114598	-	-	-	AJ404771	-	AJ240866	-	AJ241275	-
<i>Schippia</i>	-	-	-	AM114555	-	-	-	AJ404749	-	AJ404924	-	AJ404891	-
<i>Sclerosperma</i>	-	-	-	AM114629	AF455597	-	AF453377	AJ404823	AJ830190	AJ404948	-	AJ404915	-
<i>Serenoa</i>	-	-	-	AM114585	AF249932*	-	-	AJ404760	-	AM116788	-	AJ241266	-
<i>Socratea</i>	AY012366	AY012423	-	AM114618	AF249964	-	AF453378	AM110205	AY543108	AM116797	-	AM113641	-
<i>Solfia</i>	-	-	-	-	-	-	AJ831334	AJ829912	AJ830204	-	-	-	-
<i>Sommieria</i>	-	-	-	AM114658	AF455598	-	AJ831335	AM110220	AJ830147	AM116813	-	AM113657	-
<i>Syagrus</i>	-	AY044471	-	AM114638	-	AY04458	AY601259	AJ404827	-	AJ240901	AY044519	AJ241310	AY044615
<i>Synechanthus</i>	-	-	-	AM114622	-	-	-	AJ404786	-	AJ240880	-	AJ241787	-

<i>Tectiphiala</i>	-	-	-	AM114692	AF249965	-	AF453380	AJ829914	AJ830148	AM116837	-	AM113680	-
<i>Thrinax</i>	AY012345	AY012402	-	AM114561	-	AY044526	-	AJ404750	-	AM116774	AY044477	AJ241256	AY044575
<i>Trachycarpus</i>	AY012346	AY012403	-	AM114570	-	-	-	AJ404752	-	AJ404925	-	AJ404892	-
<i>Trithrinax</i>	AY012347	AY012404	-	AM114556	-	-	-	AJ404745	-	AJ240844	-	AJ241253	-
<i>Veillonia</i>	-	-	-	AM114672	-	-	AJ831338	AM110226	AJ830149	AM116823	-	AM113666	-
<i>Veitchia</i>	AY012382	AY012439	-	AM114696	-	-	AJ831342	AJ404813	AJ830205	AJ404942	-	AJ404909	-
<i>Verschaffeltia</i>	-	-	-	-	AF455599	-	AF453381	AJ829916	AJ830150	-	-	-	-
<i>Voanioala</i>	-	AY044472	-	AM114634	-	AY044569	AY601266	AM110210	-	AM116802	AY044520	AM113646	AY044616
<i>Wallichia</i>	-	-	-	AM114594	AF249933*	-	-	AJ404792	-	AJ240884	-	AJ241293	-
<i>Washingtonia</i>	AY012351	AY012408	-	AM114586	-	AY044527	-	AM110201	-	AM116789	AY044478	AM113633	AY044576
<i>Welfia</i>	-	-	-	AM114650	AF455600	-	AY772771	AJ829917	AY779371	AM116809	-	AM113653	-
<i>Wendlandiella</i>	AY012363	AY012420	-	AM114621	-	AY044541	AJ831353	AM110206	AJ830167	AM116798	AY044492	AM113642	-
<i>Wettinia</i>	AY012367	AY012424	-	AM114619	AF249934*	AY044546	AJ831373	AJ404794	AJ830191	AJ404931	AY044497	AJ404898	AY044593
<i>Wodyetia</i>	-	-	-	AM114698	-	-	AJ831343	AM110236	AJ830206	AM116841	-	AM113684	-
<i>Zombia</i>	-	-	-	AM114557	-	-	-	AM110192	-	AM116771	-	AM113619	-
Outgroups													
<i>Anigozanthos</i>	AF069214	AF387600	-	AM114721	AF249921*	AF546994	-	AM110248	-	AM116856	-	AM113699	-
<i>Calectasia</i>	AF069209	AF168891	-	-	-	AY191208	-	AF206743	-	-	-	-	-
<i>Catopsis</i>	-	-	-	AY614026	AF249941	L75855	-	L19976	-	AF537875	-	AY614270	-
<i>Costus</i>	AF069222	AF168898	-	AF478907	AF249945	AY191215	-	AF243510	-	-	-	AY041072	-
<i>Dasyopogon</i>	AJ417898	AF168907	-	AM114719	-	AY191209	-	AM110246	-	AM116854	-	AM113697	-
<i>Fargesia</i>	-	-	-	AM114722	-	-	-	AM110249	-	AM116857	-	AM113700	-
<i>Hanguana</i>	AF387604	AF387602	-	AM114720	-	AY007654	-	AM110247	-	AM116855	-	AM113698	-
<i>Kingia</i>	-	-	-	AM114718	-	-	-	AM110245	-	AM116853	-	AM113696	-
<i>Musa</i>	U42083	AF168931	-	AM114725	-	AY191219	-	AM110252	-	AM116860	-	AM113703	-

<i>Tradescantia</i>	AF069213	AF168950	-	AM114727	-	AY624124	-	AM110254	-	AM116862	-	AM113705	-
<i>Typha</i>	AF168880	AF168951	-	AM114723	AF249966	TLU79230	-	AM110250	-	AM116858	-	AM113701	-
<i>Vriesia</i>	-	-	-	AM114726	-	-	-	AM110253	-	AM116861	-	AM113704	-
<i>Zea</i>	AF168884	NC001666	-	NC001666	L35914*	NC001666	-	NC001666	-	NC001666	-	NC001666	-

Online Appendix 2. Characters and character states for the morphology data partition.

The dataset is available from <http://systematicbiology.org>,

<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: oppositipetiole

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: pleoanthic
 - 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: gynoeciform
 - 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: runcate

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.



