

## ***New Phytologist* Supporting Information**

Article title: **Nested radiations and the pulse of angiosperm diversification: increased diversification rates often follow whole genome duplications**

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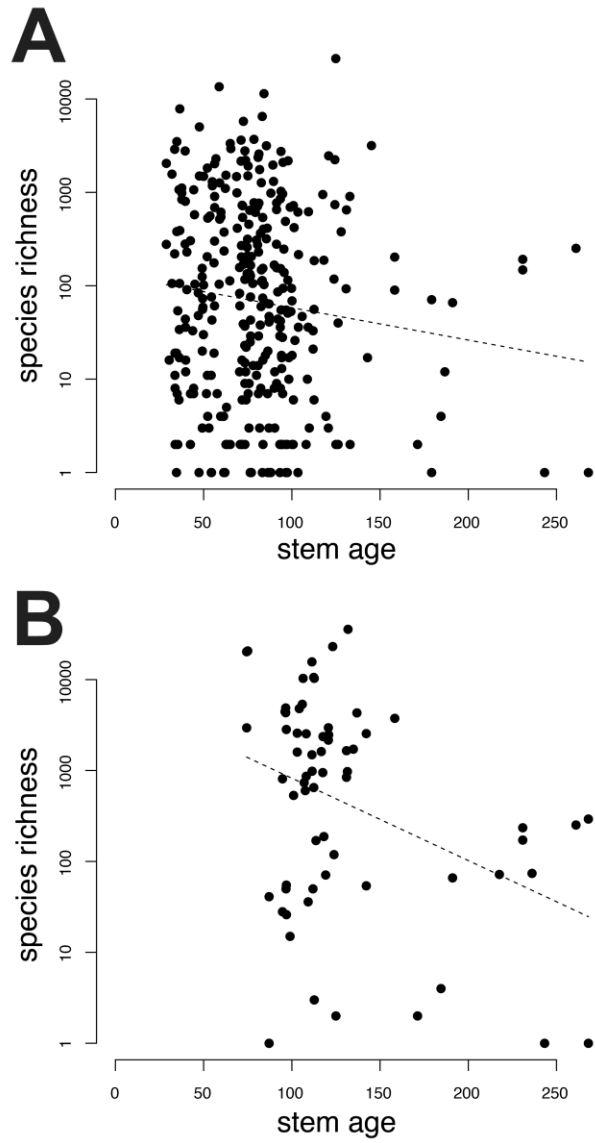
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The following Supporting Information is available for this article:

**Fig. S1** Observed relationship between lineage age and species richness for families (**A**;  $R^2 = 0.016$ ;  $P = 0.0227$ ) and orders (**B**;  $R^2 = 0.144$ ;  $P = 0.0017$ ).

**Table S1** MEDUSA estimates for shifts in diversification finding support in at least one analysis across the distribution of bootstrap replicate trees.

**Table S2** MEDUSA estimates for shifts in diversification finding support in at least one analysis across the distribution of bootstrap replicate trees.



**Fig. S1** Observed relationship between lineage age and species richness for families (**A**;  $R^2 = 0.016$ ;  $P = 0.0227$ ) and orders (**B**;  $R^2 = 0.144$ ;  $P = 0.0017$ ).

**Table S1** MEDUSA estimates for shifts in diversification finding support in at least one analysis across the distribution of bootstrap replicate trees. Where indicated, values are averaged across bootstrap-replicate trees. Columns are as follows – *description*: topological position of the shifted lineage, MRCA = most recent common ancestor, clade names (in italics) follow Cantino *et al.* (2007) and Soltis *et al.* (2011), family and order names follow APGIII (The Angiosperm Phylogeny Group, 2009); *support*: fraction of trees in which shift received statistical support; *MYA*: mean estimate of age of shift (millions of years ago); *r*: maximum likelihood estimate of net diversification;  $\epsilon$ : maximum likelihood estimate of relative extinction;  $\Delta_r$ : mean magnitude of change in net diversification relative to immediate ancestor (see Fig. 1a for further detail);  $\Delta_\epsilon$ : mean magnitude of change in relative extinction relative to immediate ancestor relative to immediate ancestor (see Fig. 1a for further detail). Because diversification rate analyses were collapsed to the family level, relative extinction ( $\epsilon$  and  $\Delta_\epsilon$ ) cannot be calculated and is noted as NA (not applicable) for those clades.

	<b>description</b>	<b>support</b>	<b>MYA</b>	<b>r</b>	<b><math>\epsilon</math></b>	<b><math>\Delta_r</math></b>	<b><math>\Delta_\epsilon</math></b>
	Cactaceae	1.00	29.1	0.2626	NA	0.1359	NA
	MRCA of (Caryophyllaceae) and (Stegnospermataceae)	1.00	62.2	0.1267	0.000	0.0910	-0.026
	Fabaceae	1.00	69.3	0.1452	NA	0.0809	NA
	<i>Mesangiospermae</i>	1.00	218.8	0.0473	0.220	0.0349	-0.662
	MRCA of (Montiniaceae) and (Sphenocleaceae + Hydroleaceae)	1.00	63.1	0.0324	0.000	-0.0984	-0.679
	Asteraceae	1.00	48.8	0.2101	NA	0.1292	NA
	MRCA of ( <i>Campanulidae</i> + <i>Lamiidae</i> )	1.00	106.2	0.0612	0.006	-0.0030	-0.541
	Berberidopsidales	1.00	97.9	0.0043	0.000	-0.0599	-0.549
	Blandfordiaceae	1.00	119.6	0.0116	NA	-0.0505	NA
	MRCA of (Aphloiaceae + Strasburgeriaceae)	1.00	93.9	0.0074	0.000	-0.0538	-0.627
	MRCA of (Araliaceae) and (Myodocarpaceae + Apiaceae)	0.99	76.5	0.0996	0.000	0.0469	0.000
	Annonaceae	0.99	81.2	0.0927	NA	0.0451	NA
	Lauraceae	0.98	93.0	0.0857	NA	0.0379	NA
	Piperaceae	0.98	74.8	0.1012	NA	0.0534	NA
	MRCA of (Paeoniaceae) and (Altingiaceae)	0.98	103.6	0.0377	0.000	-0.0277	-0.502
	MRCA of (Superrosidae + Superasteridae)	0.98	119.2	0.0645	0.541	0.0174	0.347
	Acoraceae	0.97	172.4	0.0040	NA	-0.0435	NA
	Curtisiaceae	0.96	96.1	0.0000	NA	-0.0645	NA
	Ceratophyllaceae	0.95	186.1	0.0075	NA	-0.0401	NA
	MRCA of (Capparaceae + Brassicaceae)	0.94	34.7	0.2187	0.000	0.1614	-0.311
	MRCA of ( <i>Commelinidae</i> + Asparagales)	0.92	135.6	0.0626	0.941	0.0154	0.709
	MRCA of (Arecaceae) and (Commelinales + Zingiberales)	0.92	123.8	0.0629	0.000	0.0003	-0.941
	Plocospermataceae	0.92	61.5	0.0000	NA	-0.1288	NA
	MRCA of (Gentianales + Solanales) and (Boraginaceae + Lamiales)	0.90	76.3	0.1287	0.522	0.0821	0.609
	MRCA of (Rhabdodendraceae) and (Simmondsiaceae)	0.83	87.5	0.0293	0.000	-0.0342	-0.645
	Hurteales	0.78	90.5	0.0223	0.000	-0.0409	-0.669
	MRCA of (Vochysiaceae + Myrtaceae) and (Melastomataceae)	0.76	88.2	0.1102	0.000	0.0451	-0.438
	Euphorbiaceae	0.70	82.7	0.1069	NA	0.0407	NA
	MRCA of (Liliaceae + Smilacaceae)	0.66	80.0	0.0779	0.000	0.0288	-0.052
	MRCA of (Vivianiaceae + Melianthaceae)	0.66	94.5	0.0287	0.000	-0.0342	-0.754
	MRCA of (Anacardiaceae + Burseraceae) and (Sapindaceae)	0.64	73.4	0.1199	0.000	0.0585	-0.437
	MRCA of (Santalaceae) and (Opiliaceae)	0.63	45.0	0.1430	0.000	0.0761	-0.339
	Ericaceae	0.61	64.7	0.1262	NA	0.0579	NA
	MRCA of (Rousseaceae + Campanulaceae) and (Argophyllaceae + Alseuosmiaceae) and (Stylidiaceae)	0.60	83.7	0.0818	0.000	0.0313	-0.002

	Peridiscaceae	0.57	108.1	0.0064	NA	-0.0571	NA
	Chrysobalanaceae	0.56	53.5	0.1175	NA	0.0506	NA
	Aquifoliaceae	0.56	68.9	0.0875	NA	0.0381	NA
	MRCA of (Calceolariaceae + Gesneriaceae) and (Stilbaceae)	0.54	43.9	0.2007	0.000	0.0760	-0.435
	MRCA of (Urticaceae + Moraceae)	0.51	58.8	0.1306	0.000	0.0631	-0.364
	MRCA of (Achariaceae) and (Ixonanthaceae + Irvingiaceae) and (Clusiaceae)	0.46	104.5	0.0638	0.000	-0.0004	-0.592
	MRCA of (Bignoniaceae) and (Byblidaceae)	0.44	38.0	0.2118	0.000	0.0850	-0.746
	Brassicales	0.44	81.5	0.0530	0.000	-0.0086	-0.867
	MRCA of (Droseraceae + Nepenthaceae) and (Drosophyllaceae)	0.43	81.6	0.0566	0.000	-0.0041	-0.882
	MRCA of (Polygonaceae + Plumbaginaceae)	0.42	59.2	0.1147	0.000	0.0466	-0.134
	Lepidobotryaceae	0.40	88.1	0.0000	NA	-0.0638	NA
	MRCA of (Bruniales) and (Paracryphiaceae + Dipsacales) and (Pennantiaceae + Apiales)	0.40	97.4	0.0554	0.000	-0.0208	-0.016
	Balsaminaceae	0.36	42.7	0.1341	NA	0.0658	NA
	Huaceae	0.29	109.8	0.0100	NA	-0.0529	NA
	MRCA of (Sapotaceae) and (Ebenaceae + Primulaceae)	0.28	84.3	0.0913	0.000	0.0236	-0.088
	Proteaceae	0.28	92.1	0.0747	NA	0.0277	NA
	MRCA of (Cucurbitales + Fagales)	0.27	104.4	0.0659	0.778	-0.0032	0.689
	MRCA of (Celastrales) and (Oxalidales + Malpighiales)	0.26	113.2	0.0636	0.182	0.0029	-0.721
	Ctenolophonaceae	0.23	101.1	0.0069	NA	-0.0557	NA
	Malvales	0.21	80.9	0.0953	0.000	0.0416	-0.001
	MRCA of (Ixonanthaceae + Irvingiaceae)	0.19	99.0	0.0263	0.000	-0.0422	-0.138
	MRCA of (Thymelaeaceae + Malvaceae)	0.19	80.8	0.0997	0.000	0.0346	-0.232
	MRCA of (Pandaceae) and (Linaceae + Centroplocaceae)	0.18	94.7	0.0463	0.000	-0.0154	-0.834
	Oncothecaceae	0.17	96.2	0.0000	NA	-0.0882	NA
	Cephalotaceae	0.17	77.7	0.0000	NA	-0.0610	NA
	MRCA of (Icacinaeae + Garryales)	0.16	95.6	0.0448	0.000	-0.0439	-0.039
	Aquifoliales	0.16	101.1	0.0645	0.000	-0.0239	-0.039
	MRCA of (Argophyllaceae + Alseuosmiaceae)	0.14	74.5	0.0354	0.000	-0.0494	-0.006
	MRCA of (Crossosomatales) and (Picramniaceae)	0.14	112.0	0.0483	0.000	-0.0210	-0.060
	MRCA of (Martyniaceae + Pedaliaceae)	0.12	37.2	0.0872	0.000	-0.1165	0.000
	Barbeuiaceae	0.12	52.0	0.0000	NA	-0.1272	NA
	MRCA of (Chloranthaceae + Magnoliidae)	0.12	194.9	0.0441	0.000	0.0024	-0.768
	MRCA of (Rosales) and (Cucurbitales + Fagales)	0.12	106.4	0.0627	0.882	-0.0027	0.705
	MRCA of (Oncothecaceae) and (Vahliaaceae)	0.11	96.4	0.0116	0.000	-0.0567	0.000
	<i>Lamiidae</i>	0.11	97.2	0.0404	0.000	-0.0347	0.000
	Saxifragales	0.09	117.7	0.0705	0.000	0.0097	-0.913
	MRCA of (Gentianales + Solanales)	0.09	75.2	0.1511	0.000	0.0622	0.000
	Asparagales	0.08	127.2	0.0573	0.963	0.0023	0.557
	Brassicaceae	0.06	41.1	0.2018	NA	0.1470	NA
	Poaceae	0.06	84.2	0.1109	NA	0.0537	NA
	Bromeliaceae	0.05	85.8	0.0940	NA	0.0342	NA
	Petrosaviidae	0.04	142.0	0.0639	0.000	0.0152	-0.062
	Campanulaceae	0.03	76.2	0.1028	NA	0.0505	NA
	<i>Nartheciidae</i>	0.03	152.5	0.0387	0.889	-0.0026	0.865
	MRCA of (Berberidaceae + Ranunculaceae)	0.03	127.9	0.0592	0.000	0.0183	0.000
	MRCA of (Goodeniaceae) and (Calyceraceae + Asteraceae)	0.03	59.8	0.0947	0.000	0.0486	0.000
	MRCA of (Fagaceae) and (Myricaceae + Juglandaceae) and (Betulaceae + Casuarinaceae)	0.02	62.9	0.1107	0.000	0.0414	-0.161
	Dipsacales	0.02	90.3	0.0710	0.000	0.0266	0.000

MRCA of (Cucurbitaceae) and (Begoniaceae + Datisceae)	0.02	71.1	0.1058	0.000	0.0377	-0.200
MRCA of (Byblidaceae) and (Verbenaceae + Thomandersiaceae) and (Lamiaceae)	0.02	39.5	0.2048	0.000	0.0712	-0.650
Malpighiales	0.02	109.7	0.0714	0.000	0.0118	-0.823
Lactoridaceae	0.02	99.6	0.0000	NA	-0.0470	NA
Tetrachondraceae	0.02	53.7	0.0205	NA	-0.1249	NA
Cycadales	0.02	78.8	0.0635	0.000	0.0504	-0.853
Poales	0.02	88.8	0.1020	0.000	0.0533	-0.847
MRCA of (Circaeasteraceae + Lardizabalaceae)	0.02	126.0	0.0242	0.000	-0.0247	-0.733
Pentaphragmataceae	0.02	84.2	0.0082	NA	-0.0854	NA
Loranthaceae	0.02	36.2	0.1851	NA	0.1208	NA
MRCA of (Picramniaceae) and (Sapindales)	0.02	109.3	0.0457	0.000	-0.0233	-0.001
Trochodendraceae	0.02	124.7	0.0056	NA	-0.0445	NA
Ranunculales	0.01	135.6	0.0519	0.000	0.0053	-0.857
<i>Fabidae</i>	0.01	113.0	0.0570	0.933	0.0112	0.047
MRCA of (Polemoniaceae + Fouquieriaceae) and (Sapotaceae) and (Pentaphylacaceae)	0.01	69.1	0.0988	0.000	0.0513	-0.899
Eupteleaceae	0.01	132.2	0.0052	NA	-0.0463	NA
Vahliaceae	0.01	74.6	0.0147	NA	-0.1242	NA
MRCA of (Connaraceae + Oxalidaceae)	0.01	58.9	0.0971	0.000	0.0325	0.000
MRCA of (Diapensiaceae + Styracaceae) and (Sarraceniaceae + Actinidiaceae) and (Clethraceae)	0.01	83.0	0.0581	0.000	-0.0058	-0.775
MRCA of (Sabiaceae + Proteales) and (Trochodendraceae)	0.01	131.4	0.0339	0.000	-0.0157	-0.088
Aristolochiaceae	0.01	100.9	0.0636	NA	0.0243	NA
Capparaceae	0.01	37.5	0.1585	NA	0.1021	NA
<i>Magnoliidae</i>	0.01	146.2	0.0456	0.000	0.0092	-0.861
MRCA of (Trochodendraceae) and (Buxaceae + Gunneridae)	0.01	128.2	0.0361	0.000	-0.0075	-0.824
MRCA of (Sapotaceae) and (Pentaphylacaceae)	0.01	65.3	0.1152	0.000	0.0648	-0.863
MRCA of (Marcgraviaceae) and (Tetrameristaceae + Balsaminaceae)	0.01	43.6	0.1161	0.000	0.0482	-0.009
MRCA of (Escalloniaceae + Asterales)	0.01	97.4	0.0823	0.000	-0.0569	-0.554
Myrtaceae	0.01	61.9	0.1400	NA	0.0905	NA
Apiaceae	0.01	59.1	0.1341	NA	0.0495	NA
MRCA of (Lythraceae + Onagraceae)	0.01	68.2	0.0946	0.000	0.0288	-0.037
Chloranthaceae	0.00	198.9	0.0211	NA	-0.0360	NA
Melastomataceae	0.00	68.1	0.1174	NA	0.0718	NA
<i>Eudicotyledoneae</i>	0.00	136.9	0.0511	0.000	0.0126	-0.935
MRCA of (Magnoliales + Laurales)	0.00	126.9	0.0443	0.000	0.0064	-0.837
<i>Pentapetalae</i>	0.00	117.5	0.0577	0.915	0.0036	0.309
MRCA of (Pentaphylacaceae) and (Theaceae)	0.00	85.6	0.0651	0.000	0.0026	-0.813
MRCA of (Siparunaceae) and (Gomortegaceae + Atherospermataceae)	0.00	98.4	0.0346	0.000	-0.0070	-0.890
MRCA of (Staphyleaceae) and (Stachyuraceae + Crossosomataceae)	0.00	106.8	0.0492	0.000	-0.0100	-0.929
MRCA of (Ceratophyllaceae + Eudicotyledoneae)	0.00	191.7	0.0087	0.000	-0.0298	-0.935
MRCA of (Sapindaceae) and (Meliaceae)	0.00	69.5	0.1250	0.000	0.0672	-0.822
MRCA of (Huerteales) and (Malvales + Brassicales)	0.00	104.1	0.0953	0.000	0.0259	-0.258
Stylidiaceae	0.00	78.1	0.0338	NA	-0.0733	NA
Rousseaceae	0.00	81.4	0.0324	NA	-0.0747	NA
Escalloniaceae	0.00	96.9	0.0414	NA	-0.0987	NA
MRCA of (Hydrangeaceae + Loasaceae)	0.00	36.8	0.1489	0.000	0.1009	-0.856
MRCA of (Connaraceae + Oxalidaceae) and (Brunelliaceae)	0.00	63.8	0.1279	0.000	0.0790	-0.854
MRCA of (Xanthorrhoeaceae) and (Asparagaceae + Amaryllidaceae)	0.00	81.4	0.0992	0.000	0.0391	-0.399
MRCA of (Putranjivaceae) and (Caryocaraceae)	0.00	104.0	0.0582	0.000	-0.0168	0.000

Crossosomatales	0.00	105.3	0.0242	0.456	-0.0387	-0.385
MRCA of (Himantandraceae) and (Annonaceae + Eupomatiaceae)	0.00	90.9	0.0121	0.000	-0.0439	-0.523
MRCA of (Anacardiaceae + Burseraceae)	0.00	0.0	0.3811	1.000	0.3367	0.093
MRCA of (Elaeocarpaceae) and (Cephalotaceae + Cunoniaceae)	0.00	38.2	0.1579	0.000	0.1084	-0.866
MRCA of (Ericales) and (Campanulidae + Lamiidae)	0.00	98.8	0.1335	0.000	0.0840	-0.866
Rutaceae	0.00	50.0	0.1461	NA	0.0801	NA
Begoniaceae	0.00	59.7	0.1227	NA	0.0586	NA
MRCA of (Escalloniaceae + Asterales) and (Bruniales)	0.00	89.3	0.0962	0.000	0.0466	0.000
MRCA of (Oxalidales + Malpighiales)	0.00	111.5	0.0664	0.000	-0.0026	-0.610
Canellales	0.00	142.2	0.0289	0.000	-0.0321	-0.367
<i>Campanulidae</i>	0.00	91.8	0.0809	0.000	-0.0526	0.000
Menyanthaceae	0.00	73.7	0.0497	NA	-0.0852	NA

**Table S2** Stem ages for families retained for diversification analyses. Columns are as follows – *family*: family names following APGIII (The Angiosperm Phylogeny Group, 2009); *MLE*: divergence time estimate from the maximum likelihood tree; *mean*, *median*, *min*, *max*, *q0.025*, *q0.975*: summarized divergence time estimates across the bootstrapped distribution of 1024 trees.

<b>family</b>	<b>MLE</b>	<b>mean</b>	<b>median</b>	<b>min</b>	<b>max</b>	<b>q0.025</b>	<b>q0.975</b>
Acanthaceae	33.59	33.53	33.6	20.58	37.72	30.99	35.76
Achariaceae	99.47	99.24	99.51	80.43	101.81	97.67	100.88
Achatocarpaceae	52.11	52.62	52.58	47.94	61.44	49.53	56
Acoraceae	171.27	172.1	173.39	134.81	187	160.67	180.34
Actinidiaceae	70.36	70.13	70.47	34.36	78.72	64.03	75.41
Adoxaceae	91.36	90.85	91.34	62.6	94.36	88.9	93.17
Aextoxicaceae	97.43	96.4	97.62	34.65	106.66	88.68	103.44
Aizoaceae	44.39	45.06	44.87	40.32	56.08	41.64	48.99
Alismataceae	82.73	83.49	83.4	71.41	98.01	76.77	90.85
Alseuosmiaceae	74.09	73.79	74.26	46.62	78.35	70.52	77.08
Altingiaceae	100.14	98.69	100.1	28.8	104.87	95.56	103.3
Amaranthaceae	52.11	52.62	52.58	47.94	61.44	49.53	56
Amaryllidaceae	71.22	71.52	71.77	49.11	80.98	65.14	76.92
Amborellaceae	243.27	244.69	248.61	182.63	260.21	223.07	255.72
Anacardiaceae	59.83	59.65	59.85	0	65.72	54.46	63.71
Ancistrocladaceae	49.24	49.47	49.65	35.58	56.9	43.45	54.42
Anisophylleaceae	73.38	73.42	73.47	66.28	78.17	69.82	76.64
Annonaceae	81.74	81.18	81.75	30.09	89.41	76.27	86.75
Aphanopetalaceae	71.29	71.29	71.32	60.34	77.1	67.7	74.61
Aphloiaceae	94.45	93.91	94.43	63.19	102.12	88.76	98.77
Apiaceae	73.39	73.12	73.38	58.02	76.52	70.89	75.21
Apocynaceae	47.61	48.14	47.9	43.01	62.24	44.67	52.66
Aquifoliaceae	69.07	69.13	69.16	65.5	75.56	65.5	72.7
Araceae	145.13	145.84	146.63	114.13	158.16	136.27	153.72
Araliaceae	75.08	74.99	75.12	67.85	77.31	73.29	76.63
Arecaceae	120.87	121.24	121.65	99.7	127.51	115.28	126.11
Argophyllaceae	74.09	73.79	74.26	46.62	78.35	70.52	77.08
Aristolochiaceae	103.45	102.56	103.17	83.08	112.73	89.26	108.62
Asparagaceae	71.22	71.52	71.77	49.11	80.98	65.14	76.92
Asteraceae	49.09	48.78	48.96	36.47	53.93	45.11	51.63
Asteropeiaceae	33.82	34.1	34.05	28.16	42.92	30.1	38.58
Atherospermataceae	86.41	85.35	86.37	28.95	98.88	73.98	94.51
Austrobaileyaceae	179.24	179.39	181.08	114.73	199.3	164.59	192.16
Balanopaceae	75.8	76.62	76.59	62.85	83.88	72.02	81
Balsaminaceae	42.52	42.71	42.69	36.45	49.08	39.01	46.61
Barbeuiaceae	47.4	48.14	47.93	40.39	58.88	43.83	54.35
Basellaceae	33.74	33.91	33.98	26	38.91	30.05	37.23
Bataceae	63.61	63.89	63.63	59.1	82.96	60.53	67.72
Begoniaceae	62.63	62.73	62.72	56.68	68.52	58.77	66.66
Berberidaceae	124.4	124.4	124.4	124.4	124.4	124.4	124.4
Berberidopsidaceae	97.43	96.4	97.62	34.65	106.66	88.68	103.44
Betulaceae	40.51	40.77	40.84	30.18	50.21	35.33	46
Bignoniaceae	37.67	37.61	37.72	22.19	40.97	35.2	39.51
Bixaceae	73.3	73.16	73.23	68.93	78.94	70.26	75.94
Blandfordiaceae	119.35	119.59	120.15	86.11	130.98	112.57	125.93
Bonnetiaceae	93.45	93.41	93.45	91.94	93.47	93.07	93.45
Boraginaceae	73.77	74.2	74.06	70.17	81.73	71.4	78.21
Brassicaceae	34.81	35.08	34.75	30.07	52.17	32.1	38.55
Bromeliaceae	85.59	85.31	85.57	66.5	92.69	79.85	89.89
Brunelliaceae	82.58	81.84	82.59	38.2	89.81	77.35	86.6

Bruniaceae	93.55	93.1	93.5	71.22	97.63	90.14	95.87
Burseraceae	59.83	59.65	59.85	0	65.72	54.46	63.71
Buxaceae	123.9	123.9	123.9	123.9	123.9	123.9	123.9
Byblidaceae	35.01	34.98	35.07	21.25	38.6	32.6	36.99
Cabombaceae	112.57	112.51	113.54	105	116.9	105	116.9
Cactaceae	28.87	29.12	29.08	22.87	33.72	26.09	32.42
Calceolariaceae	39.54	39.59	39.69	26.31	42.87	37.44	41.58
Calophyllaceae	91.3	91.31	91.33	88.51	93.39	89.76	92.79
Calycanthaceae	108.8	108.8	108.8	108.8	108.8	108.8	108.8
Calyceraceae	49.09	48.78	48.96	36.47	53.93	45.11	51.63
Campanulaceae	80.87	80.63	80.89	63.78	84.47	78.09	83.03
Canellaceae	112.06	110.96	112.13	71.59	120.82	94.94	117.79
Cannabaceae	58.79	59.17	59.04	54.19	72.33	56	62.53
Capparaceae	34.81	35.08	34.75	30.07	52.17	32.1	38.55
Caprifoliaceae	91.36	90.85	91.34	62.6	94.36	88.9	93.17
Cardiopteridaceae	87.1	86.81	87.05	66.57	91.9	83.42	90.1
Caricaceae	76.6	76.72	76.54	70.16	89.53	73.38	80.47
Caryocaraceae	101.75	101.5	101.8	70.34	104.46	99.58	103.38
Caryophyllaceae	56.97	57.55	57.44	52.94	67.24	54.78	60.79
Casuarinaceae	40.51	40.77	40.84	30.18	50.21	35.33	46
Celastraceae	88.11	88.05	88.07	81.11	92.75	84.72	91.12
Centropalacaceae	90.02	90.03	90.26	64.04	97.69	84.06	95.04
Cephalotaceae	77.05	76.42	77.24	36.01	86.39	70.73	81.44
Ceratophyllaceae	184.55	185.63	186.88	147.54	199.68	171.82	195.68
Cercidiphyllaceae	93.21	91.84	93.11	25.88	101.3	86.29	98.45
Chloranthaceae	191.1	192	194	142.49	205.49	177.18	202.01
Chrysobalanaceae	52.33	53.44	53.34	46.19	63.39	49.06	58.52
Circaeasteraceae	126.22	126.08	126.08	118.71	130.64	123	128.83
Cistaceae	49.17	49.23	49.12	45.25	58.48	46.35	52.79
Clethraceae	70.4	70.04	70.34	34.49	78.24	64.91	74.63
Clusiaceae	93.5	93.5	93.5	93.5	93.55	93.5	93.5
Columelliaceae	93.55	93.1	93.5	71.22	97.63	90.14	95.87
Combretaceae	86.06	86.09	86.09	82.86	88.12	84.35	87.61
Commelinaceae	100.89	100.98	101.05	87.95	108.86	95.15	106.19
Connaraceae	61.58	61.44	61.77	40.62	68.64	56.58	65.88
Convolvulaceae	56.24	56.24	56.24	56.24	56.24	56.24	56.24
Coriariaceae	71.73	71.76	71.74	64.26	76.83	68.29	75.07
Cornaceae	97.74	97.05	97.74	85.8	97.74	94.23	97.74
Crassulaceae	89.63	89.63	89.62	83.74	93.68	87.06	91.95
Crossosomataceae	44.33	43.98	44.35	22.86	50.89	38.17	48.85
Crypteroniaceae	39.84	39.83	39.74	31.59	48.14	34.56	44.99
Ctenolophonaceae	100.77	100.48	100.85	75.55	104.09	95.71	103.55
Cucurbitaceae	68.89	68.98	68.97	61.34	74.59	65.31	72.55
Cunoniaceae	77.05	76.42	77.24	36.01	86.39	70.73	81.44
Cupressaceae	230.88	229.98	229.03	209.22	255.72	215.34	247.77
Curtisiaceae	96.58	95.52	96.25	60.55	97.59	92.39	97.58
Cycadaceae	158.29	156.66	153.14	70.48	218.36	132.29	200.99
Cyclanthaceae	81.12	80.78	81.12	65	81.12	81.12	81.12
Cyrtillaceae	65.09	64.75	65.04	32.97	73.11	58.77	70.13
Daphniphyllaceae	93.21	91.84	93.11	25.88	101.3	86.29	98.45
Datisceae	62.63	62.73	62.72	56.68	68.52	58.77	66.66
Degeneriaceae	93.62	92.85	93.65	32.53	100.09	88.4	97.7
Diapensiaceae	73.37	73.05	73.43	35.79	82.15	67.43	78.25
Dichapetalaceae	55.9	57	57.04	48.43	66.94	51.45	62.28
Didiereaceae	33.74	33.91	33.98	26	38.9	30.05	37.23
Dilleniaceae	118.16	118.15	118.18	114.35	119.16	117.3	118.82
Dioncophyllaceae	49.24	49.47	49.65	35.58	56.9	43.45	54.42
Dioscoreaceae	130.97	131.38	132.01	98.22	144.75	122.76	138.62



Dipentodontaceae	90.3	89.84	90.19	70.08	96.75	84.21	94.11
Dipterocarpaceae	49.17	49.23	49.12	45.25	58.48	46.35	52.79
Droseraceae	73.42	73.92	73.84	68.43	84.6	70.62	77.6
Drosophyllaceae	62.05	62.36	62.39	55.73	68.61	58.22	66.16
Ebenaceae	81.35	81.07	81.45	40.06	87.2	76.58	85
Elaeagnaceae	77.84	78.09	78.05	73.12	85.52	74.83	81.54
Elaeocarpaceae	79.34	78.67	79.53	36.24	86.57	73.84	83.14
Elatinaceae	93.86	93.69	93.79	83.02	98.1	90.22	96.34
Ericaceae	65.09	64.75	65.04	32.97	73.11	58.77	70.13
Erythroxylaceae	74.67	74.66	75	54.61	82.31	68.17	80.29
Escalloniaceae	96.89	96.56	96.83	78.22	98.98	95.04	98.35
Eucommiaceae	76.4	76.27	76.36	63.33	82.3	71.48	80.24
Euphorbiaceae	83.23	82.84	83.46	47	90.98	78.01	87.25
Euphroniaceae	52.33	53.44	53.34	46.19	63.39	49.06	58.52
Eupomatiaceae	81.74	81.18	81.75	30.09	89.41	76.27	86.75
Eupteleaceae	133.02	132.99	133.01	130.26	134.38	132.08	133.8
Fabaceae	69.42	70.12	69.92	67.34	71.79	68.2	71.77
Fagaceae	62.3	62.61	62.68	51.38	69.26	57.66	66.86
Fouquieriaceae	79.96	79.58	79.97	53.51	86.73	74.79	83.72
Frankeniaceae	49.42	49.69	49.54	44.58	61.24	46.24	54.24
Garryaceae	76.4	76.27	76.36	63.33	82.3	71.48	80.24
Gelsemiaceae	51.59	52.04	51.88	47.53	64.95	48.74	56.33
Gentianaceae	47.61	48.14	47.9	43.01	62.24	44.67	52.66
Geraniaceae	109.43	109.51	109.52	106.24	112.86	107.5	111.58
Gesneriaceae	39.54	39.59	39.69	26.31	42.87	37.44	41.58
Ginkgoaceae	268.1	265.2	266.43	163.67	283.15	252.49	279.15
Gisekiaceae	42.55	43.22	43.06	38.31	54.75	39.93	47.28
Gnetaceae	87.11	87.67	87.17	74.69	126.87	78.06	99.84
Gomortegaceae	86.41	85.35	86.37	28.95	98.88	73.98	94.51
Goodeniaceae	56.19	56.08	56.08	49.31	60.16	53.11	58.88
Goupiaceae	96.39	96.19	96.51	77.27	100.48	92.54	99.3
Griselinaceae	81.07	80.82	81	69.96	83.3	79.01	82.62
Grossulariaceae	76.15	75.81	76.04	58.62	82.67	71.08	79.87
Gunneraceae	100.1	99.82	100.1	88.2	100.1	98.68	100.1
Halophytaceae	34.62	34.89	34.9	26.67	40.55	31.44	38.01
Haloragaceae	54.46	54.53	54.54	46.01	60.09	50.59	57.99
Hamamelidaceae	99.83	98.23	99.63	28.14	104.56	95.01	102.87
Helwingiaceae	61.3	61.28	61.28	54.77	67.71	56.93	65.72
Hernandiaceae	92.01	91.1	91.83	50.47	97.95	86.54	96
Himantandraceae	93.28	92.68	93.47	32.47	100.06	88.6	97.49
Huaceae	109.9	109.85	109.92	102.83	112.04	107.97	111.35
Humiriaceae	105.85	105.84	105.88	101.17	107.45	104.76	106.75
Hydatellaceae	186.72	188.01	189.31	144.14	210.66	167.54	202.69
Hydrangeaceae	71.44	70.45	71.01	34.91	80.67	64.5	76.51
Hydrocharitaceae	82.73	83.49	83.4	71.41	98.01	76.77	90.85
Hydroleaceae	54.3	54.57	54.43	48.56	67.92	50.54	58.95
Hypericaceae	74.91	74.97	74.78	69.67	84.49	71.91	78.95
Icacinaceae	95.64	95.47	95.66	82.01	99.11	91.97	98.03
Iridaceae	97.87	98.13	98.41	69.95	108.11	91.03	104.66
Irvingiaceae	98.3	98.25	98.34	90.41	102.7	94.46	101.69
Iteaceae	85	84.76	84.99	66.2	90.02	81.06	88
Ixonanthaceae	98.3	98.25	98.34	90.41	102.71	94.46	101.69
Juglandaceae	46.99	47.13	47.26	33.13	56.65	40.4	52.78
Juncaginaceae	76.63	77.45	77.33	66.19	89.78	71.17	84.84
Krameriaceae	83.61	83.52	83.61	76.56	90.34	78.87	88.08
Lacistemataceae	91.36	91.14	91.43	69.46	96.08	87.65	94.5
Lactoridaceae	103.45	102.56	103.17	83.08	112.73	89.26	108.62
Lamiaceae	36.5	36.45	36.54	21.76	39.34	34.17	38.47

Lardizabalaceae	126.22	126.08	126.08	118.71	130.64	123	128.83
Lauraceae	93.86	93.04	93.8	51.75	100.29	88.96	97.72
Lecythydaceae	85.57	85.44	85.77	57.14	90.81	82.25	88.68
Lentibulariaceae	33.59	33.53	33.6	20.58	37.72	30.99	35.76
Lepidobotryaceae	88.11	88.05	88.07	81.11	92.75	84.72	91.12
Liliaceae	80.59	80.76	81.11	56.48	92.29	72.58	87.94
Limeaceae	57.67	58.27	58.18	50.96	67.37	55.37	61.78
Limnanthaceae	70.73	70.98	70.7	65.12	88.34	67.38	74.79
Linaceae	90.02	90.03	90.26	64.04	97.69	84.06	95.04
Loasaceae	71.44	70.45	71.01	34.91	80.67	64.5	76.51
Loganiaceae	52.03	52.6	52.46	47.85	65.7	49.32	56.67
Loranthaceae	39.65	40.14	39.83	33.62	55.07	35.6	45.7
Lythraceae	72.1	72.16	72.16	65.15	79.02	68.03	76
Magnoliaceae	95.49	94.86	95.68	33.71	102.24	90.78	99.44
Malpighiaceae	93.86	93.69	93.79	83.02	98.1	90.22	96.34
Malvaceae	78.53	78.32	78.47	73.06	81.56	75.38	80.87
Marantaceae	83.5	83.5	83.5	83.5	83.5	83.5	83.5
Marcgraviaceae	45.04	45.19	45.12	38.3	51.54	41.2	48.97
Martyniaceae	36.24	36.19	36.32	21.09	40.22	33.06	38.5
Melanthiaceae	112.67	112.93	113.28	83.8	123.69	104.59	119.86
Melastomataceae	65.43	65.47	65.4	57.74	71.58	62.05	69.29
Meliaceae	53.58	53.55	53.56	50.4	57.38	51.61	55.63
Meliantaceae	94.27	94.28	94.37	87.13	100.52	90.29	97.86
Menispermaceae	127.97	127.94	127.96	126.23	129.63	126.98	128.87
Menyanthaceae	72.43	72.21	72.36	56.96	76.37	69.34	74.98
Molluginaceae	49.61	50.18	50.13	44.29	57.84	47.22	53.85
Monimiaceae	92.01	91.1	91.83	50.47	97.95	86.54	96
Montiaceae	36.41	36.74	36.69	28.74	42.72	33.64	39.8
Montiniaceae	62.97	63.15	63.04	58.31	74.5	59.51	67.27
Moraceae	54.94	55.33	55.15	50.42	70.65	52.25	59.03
Musaceae	83.5	83.5	83.5	83.5	83.5	83.5	83.5
Myodocarpaceae	73.39	73.12	73.38	58.02	76.52	70.89	75.21
Myricaceae	46.99	47.13	47.26	33.13	56.65	40.4	52.78
Myristicaceae	93.62	92.85	93.65	32.53	100.09	88.4	97.7
Myrothamnaceae	100.1	99.82	100.1	88.2	100.1	98.68	100.1
Myrtaceae	72.54	72.34	72.51	58.39	77.18	68.32	75.59
Nelumbonaceae	120.7	119.77	120.7	108.8	120.7	115.59	120.7
Nepenthaceae	73.42	73.92	73.84	68.43	84.6	70.62	77.6
Nitrariaceae	73.83	73.58	73.66	65.41	76.94	70.08	76.58
Nothofagaceae	82.11	82.25	82.36	71.6	88.83	77.69	86.35
Nyctaginaceae	36.5	37.13	36.94	32.87	47.21	34.27	40.76
Nymphaeaceae	112.57	112.51	113.54	105	116.9	105	116.9
Ochnaceae	101.31	100.91	101.25	70.13	103.93	98.86	102.95
Olacaceae	64.84	64.83	64.84	59.13	64.84	64.84	64.84
Oleaceae	56.24	56.23	56.24	52.59	56.24	56.24	56.24
Onagraceae	72.1	72.16	72.16	65.15	79.02	68.03	76
Oncothecaceae	96.81	96.63	96.83	82.3	99.64	94.19	98.69
Opiliaceae	43.82	44.16	43.95	37.9	58.39	40.13	49.16
Orchidaceae	124.91	125.34	125.82	97.69	134.11	118.3	131.51
Orobanchaceae	32.06	32.02	32.06	20.19	35.69	29.65	34.37
Oxalidaceae	61.58	61.44	61.77	40.62	68.64	56.58	65.88
Paeoniaceae	103.7	103.35	103.55	89.05	108.82	100.18	106.21
Pandaceae	94.14	94.14	94.41	64.18	100	89.58	97.55
Papaveraceae	132.88	132.82	132.84	130.07	134.34	131.87	133.63
Paracryphiaceae	94.71	94.17	94.63	64.73	97.07	92.73	96.36
Passifloraceae	99.07	98.77	99.04	80.22	101.64	97	100.55
Paulowniaceae	34.64	34.56	34.67	21.02	38.13	32.16	36.52
Pedaliaceae	36.24	36.19	36.32	21.09	40.22	33.06	38.5

Penaeaceae	39.84	39.83	39.74	31.59	48.14	34.56	44.99
Pennantiaceae	91.71	91.39	91.71	74.72	94.27	89.46	93.16
Pentaphragmataceae	83.66	83.46	83.69	65.06	86.51	81.26	85.61
Pentaphragmataceae	83.9	83.41	83.88	40.21	88.54	80.13	86.94
Penthoraceae	54.46	54.53	54.54	46.01	60.09	50.59	57.99
Peraceae	83.23	82.84	83.46	47	90.98	78.01	87.25
Peridiscaceae	108.09	107.8	107.93	93.68	112.82	104.26	111.05
Philydraceae	100.89	100.98	101.05	87.95	108.86	95.15	106.19
Phrymaceae	32.06	32.02	32.06	20.19	35.69	29.65	34.37
Phyllanthaceae	95	94.82	95.11	78.75	99.97	90.89	97.89
Phyllonomaceae	61.3	61.28	61.28	54.77	67.71	56.93	65.72
Physenaceae	33.82	34.1	34.05	28.16	42.92	30.1	38.58
Phytolaccaceae	35.35	35.96	35.77	31.31	44.23	32.93	40.09
Picramniaceae	109.26	109.31	109.3	106.3	112.31	107.79	110.95
Picrodendraceae	95	94.82	95.11	78.75	99.97	90.89	97.89
Pinaceae	261.07	260.9	260.86	245	276.12	250.32	271.55
Piperaceae	75.24	74.77	75.16	61.61	81.65	64.94	79.07
Pittosporaceae	76.58	76.42	76.56	68.39	78.91	74.77	78.09
Plantaginaceae	37.62	37.71	37.8	26.32	41.8	35.22	40.07
Platanaceae	94.81	93.38	93.66	67.99	102.08	87.33	99
Plocospermataceae	61.39	61.49	61.46	58.84	64.94	59.78	63.51
Plumbaginaceae	59.1	59.68	59.36	54.25	76.83	56.41	63.34
Poaceae	84.22	84.22	84.22	84.19	84.22	84.22	84.22
Podocarpaceae	230.88	229.98	229.03	209.22	255.72	215.34	247.77
Podostemaceae	74.91	74.97	74.78	69.67	84.49	71.91	78.95
Polemoniaceae	79.96	79.58	79.97	53.51	86.73	74.79	83.72
Polygalaceae	71.84	70.92	71.84	66.8	71.84	67.7	71.84
Polygonaceae	59.1	59.68	59.36	54.25	76.83	56.41	63.34
Portulacaceae	28.87	29.12	29.08	22.87	33.72	26.09	32.42
Potamogetonaceae	76.63	77.45	77.33	66.19	89.78	71.17	84.84
Primulaceae	81.35	81.07	81.45	40.06	87.2	76.58	85
Proteaceae	94.81	93.38	93.66	67.99	102.08	87.33	99
Putranjivaceae	103.78	103.65	103.81	86.22	105.27	102.49	104.82
Quillajaceae	72.05	71.13	71.91	66.8	73.6	67.7	72.94
Ranunculaceae	124.4	124.4	124.4	124.4	124.4	124.4	124.4
Rapateaceae	84.22	84.22	84.22	84.19	84.22	84.22	84.22
Resedaceae	54.72	55.03	54.8	49.85	74.56	51.67	58.98
Rhabdodendraceae	87.05	87.45	87.34	83.49	94.08	85.2	90.06
Rhamnaceae	77.84	78.09	78.05	73.12	85.52	74.83	81.54
Rhizophoraceae	74.67	74.66	75	54.61	82.31	68.17	80.29
Rosaceae	89.28	89.38	89.38	84.88	93.87	86.76	92.21
Rousseaceae	80.87	80.63	80.89	63.78	84.47	78.09	83.03
Rubiaceae	58.8	59.37	59.19	54.94	70.82	56.29	63.58
Rutaceae	50	50	50	50	50	50	50
Sabiaceae	130.76	130.28	130.53	115.08	133.24	127.89	132.38
Salicaceae	91.36	91.14	91.43	69.46	96.08	87.65	94.5
Santalaceae	44.83	45.17	44.91	40.47	58.83	41.18	50.42
Sapindaceae	68.66	68.55	68.57	62.03	74	64.96	71.46
Sapotaceae	82.71	82.34	82.75	40.41	88.04	78.54	85.9
Sarcobataceae	35.35	35.96	35.77	31.31	44.23	32.93	40.09
Sarraceniaceae	70.36	70.13	70.47	34.36	78.72	64.03	75.41
Saururaceae	75.24	74.77	75.16	61.61	81.65	64.94	79.07
Saxifragaceae	76.15	75.81	76.04	58.62	82.67	71.08	79.87
Schisandraceae	158.65	158.54	159.6	105.08	178.53	144.75	170.72
Schoepfiaceae	39.65	40.14	39.83	33.62	55.07	35.6	45.7
Scrophulariaceae	37.62	37.71	37.8	26.32	41.8	35.22	40.07
Simaroubaceae	50	50	50	50	50	50	50
Simmondsiaceae	83.3	83.76	83.68	79.38	91.29	81.11	86.69

Siparunaceae	97.71	97.02	97.68	59.06	103	93.06	101.31
Smilacaceae	80.59	80.76	81.11	56.48	92.29	72.58	87.94
Solanaceae	56.24	56.24	56.24	56.24	56.24	56.24	56.24
Sphenocleaceae	54.3	54.57	54.43	48.56	67.92	50.54	58.95
Stachyuraceae	44.33	43.98	44.35	22.86	50.89	38.17	48.85
Staphyleaceae	49.9	49.47	49.85	26.75	57.08	44.22	54.49
Stegnospermataceae	59.66	60.24	60.21	53.66	68.91	57.36	63.36
Stemonaceae	81.12	80.78	81.12	65	81.12	81.12	81.12
Stemonuraceae	87.1	86.81	87.05	66.57	91.9	83.42	90.1
Stilbaceae	39.74	39.8	39.87	26.98	43.41	37.54	41.69
Strasburgeriaceae	94.45	93.91	94.43	63.19	102.12	88.76	98.77
Strelitziaceae	86.26	86.19	86.16	83.64	89.94	83.96	88.4
Stylidiaceae	78.07	77.88	78.15	59.98	81.53	75.44	80.43
Styracaceae	73.37	73.05	73.43	35.79	82.15	67.43	78.25
Surianaceae	69.42	70.12	69.92	67.34	71.79	68.2	71.77
Talinaceae	30.5	30.79	30.75	23.67	35.99	27.49	34.05
Tamaricaceae	49.42	49.69	49.54	44.58	61.24	46.24	54.24
Tapisciaceae	90.3	89.84	90.19	70.08	96.75	84.21	94.11
Tetrachondraceae	53.03	53.1	53.13	48.18	55.07	51.74	54.31
Tetrameristaceae	42.52	42.71	42.69	36.45	49.08	39.01	46.61
Theaceae	82.21	81.67	82.08	39.48	87.13	78.41	85.27
Thomandersiaceae	36.05	35.99	36.11	20.57	39.51	33.59	38.2
Thymelaeaceae	78.53	78.32	78.47	73.06	81.56	75.38	80.87
Tofieldiaceae	142.89	143.66	144.34	112.83	155.6	133.38	151.9
Toricelliaceae	82.38	82.13	82.35	70.3	84.99	80.28	84.02
Trigoniaceae	55.9	57	57.04	48.43	66.94	51.45	62.28
Trimeniaceae	158.65	158.54	159.6	105.08	178.53	144.75	170.72
Trochodendraceae	124.97	124.91	124.9	123.96	126.48	124.11	125.87
Tropaeolaceae	76.6	76.72	76.54	70.16	89.53	73.38	80.47
Typhaceae	85.59	85.31	85.57	66.5	92.69	79.85	89.89
Ulmaceae	70.54	70.88	70.81	65.56	81.77	67.56	74.45
Urticaceae	54.94	55.33	55.15	50.42	70.65	52.25	59.03
Vahliaceae	75.72	76.22	76.13	71.38	84	73.19	80.44
Verbenaceae	36.05	35.99	36.11	20.57	39.51	33.59	38.2
Violaceae	96.39	96.19	96.51	77.27	100.48	92.54	99.3
Vitaceae	117.53	117.53	117.55	113.57	118.37	116.89	118.13
Vivianiaceae	94.27	94.28	94.37	87.13	100.52	90.29	97.86
Vochysiaceae	72.54	72.34	72.51	58.39	77.18	68.32	75.59
Welwitschiaceae	87.11	87.67	87.17	74.69	126.87	78.06	99.84
Winteraceae	112.06	110.96	112.13	71.59	120.82	94.94	117.79
Xanthorrhoeaceae	75.63	75.9	76.22	51.8	84.65	69.34	81.46
Zamiaceae	158.29	156.66	153.14	70.48	218.36	132.29	200.99
Zygophyllaceae	83.61	83.52	83.61	76.56	90.34	78.87	88.08

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