

Appendix S6 Estimates of standardized epoch-specific Lineage — Diversities

Table S6a Values of epoch-specific lineage diversities (**stELDs**), based on the main tree with unresolved polytomies. All values of **stELDs** significant at $P < 0.05$ are in bold.

Habitat type		Epoch (millions of years)						
		16 4- 12 6	126-100	100-66	66-33.9	33.9- 23	23- 5.3	5.3- 0
		stELDs						
01	Free floating duckweeds	1.365	-1.657	-0.605	-1.020	-2.342	3.242	1.760
02	Submerged communities in brackish waters	2.163	-4.327	0.824	0.371	-1.430	5.235	-0.260
03	Sublittoral and eulittoral zones of temperate seas	1.004	-2.551	-0.461	2.806	-0.445	3.953	-0.078
04	Submerged stonewort swards	1.045	-1.771	0.317	-1.140	-1.927	3.828	-0.392
05	Floating or submerged rooted plants in fresh waters	0.406	-1.164	-1.195	0.719	-2.033	3.826	1.381
06	Soakways and shallow, fluctuating standing waters	-0.053	-1.135	0.652	0.935	0.377	1.178	0.546
07	Spring vegetation of weakly basic waters	-1.502	1.712	-0.722	-0.238	0.625	0.456	2.050
08	Swamps and fens	-0.790	0.086	-1.451	0.245	-0.828	4.151	2.608
09	Small sedges on wet to moist soils	-0.870	-0.186	0.238	-0.383	1.688	1.726	2.845
10	Mires developing on mesotrophic peats	1.553	-2.384	2.007	-0.098	-0.546	-0.594	1.633
11	Bog vegetation of deep, wet peats	0.442	-2.078	1.205	1.154	-0.297	0.675	3.811
12	Strongly trampled vegetation in moist places	-3.909	2.007	-0.507	0.441	3.165	5.817	2.010
13	Stonecrop communities of weathered calcareous rocks	-3.961	2.150	1.232	-1.331	2.357	4.260	2.404
14	Swards on sandy soils	-4.640	2.598	0.215	1.126	2.061	4.430	3.101
15	Chalk grasslands	-4.686	3.623	-0.047	-0.060	1.048	3.975	3.183
16	Meadows and pastures of well-drained soils	-3.401	2.517	0.906	-1.069	0.351	3.697	2.297
17	Fringe communities	-2.319	1.470	0.330	-1.750	2.070	3.094	3.163
18	Woodland margin and ride vegetation in drier situations	-3.886	3.506	-1.170	0.965	0.868	2.768	1.796
19	Unfertilized mat-grass pastures at lower elevations	-2.298	0.540	-0.241	2.399	1.199	2.355	3.518

20	Heathlands	-5.248	4.232	0.409	1.413	1.210	1.914	4.086
21	Communities of crevices of sunny wells	-4.848	4.405	-1.477	0.370	-0.212	4.976	0.857
22	Salt-marsh and strandlines sometimes mixed with sand	-2.506	0.920	-0.617	-2.026	2.440	5.962	4.001
23	Pioneer vegetation of coastal foredunes	-4.418	3.541	1.341	-3.638	1.290	4.515	5.560
24	Perennial cord grasses on intertidal mud and sand	-3.054	2.316	-1.792	-1.309	2.122	4.624	4.130
25	Annual succulent halophytes, periodically flooded	-1.886	-1.832	1.214	1.374	5.776	2.079	5.164
26	Inundated and inland salt marsh ephemerals	-2.336	1.431	-0.635	-2.643	3.170	4.497	3.498
27	Ephemerals on bare or disturbed salt-marsh mud and sand	-3.253	1.416	0.296	-0.974	2.174	5.121	3.716
28	Therophytes on bare, periodically flooded ground	-2.363	1.236	-0.244	0.599	2.517	2.232	1.894
29	Heavily nutrient-loaded ruderal habitats	-0.755	-0.778	-2.330	-0.068	1.797	6.256	1.964
30	Arable weed communities	-4.804	2.735	-1.221	0.411	3.159	6.541	4.488
31	Xero-mesophilous ruderals on nutrient-rich soils	-4.864	3.042	-0.543	-0.162	2.713	6.707	2.288
32	Tall-herb vegetation on moist fertile soils and peats	-0.839	0.079	-1.159	-0.883	0.507	4.355	1.599
33	Sunny and semi-shaded margins and clearings of woods	-2.369	1.839	-0.513	-1.224	1.274	3.743	1.616
34	Herbaceous forest-clearing communities on poor soils	-5.402	4.875	-1.055	1.010	0.614	3.905	1.461
35	Bramble underscrub of woodland edges and clearings	-4.276	3.874	-0.547	-1.106	-0.421	4.957	1.095
36	Willow scrub and woodland of mires	-1.512	1.777	-0.355	-0.604	-1.371	1.900	1.491
37	Hedges and scrub of mesotrophic, base-rich soils	-3.719	3.024	0.230	-0.580	-0.360	4.249	2.374
38	Woodland of river shoals and terraces	-1.990	1.174	-0.063	-1.363	0.265	4.809	1.330
39	Woodlands of swamps, fens and wet pastures	-0.068	0.364	-1.163	-0.725	-1.396	2.143	1.454
40	Birch-dominated swampy woodlands	0.014	0.107	-0.253	-0.842	-0.910	1.105	1.607
41	Pine and juniper woodland communities of acid soils	-5.022	4.208	1.293	-0.671	1.022	2.586	2.245
42	Acidophilous oak, birch, or beech forests	-3.202	2.692	-0.190	-0.462	0.287	3.054	3.156
43	Broadleaved woodlands on lime-rich and neutral mull soils	-1.561	2.453	-1.019	-0.179	-1.533	0.680	1.042

Table S6b Epoch-specific lineage diversities calculated from 100 trees of the species pools of Dutch angiosperms with randomly resolved polytomies (see Appendix S3 for details). All values significant at $P < 0.05$ are in bold. Note the general similarity in values with those based on the tree with unresolved polytomies (Table S6a). The only considerable difference we noted was an increase in number of positive significant values for the latest epoch (13 habitat types), and a slight decrease in number of significant values for the Oligocene (33.9-23 Ma; five habitat types). Values with changed significance levels (in comparison with Table S6a) are in italics.

Habitat type		Epoch (millions of years)						
		164 - 126	126- 100	100-66	66- 33.9	33.9-23	23-5.3	5.3-0
		Mean <i>st</i> ELDs						
01	Free floating duckweeds	1.494	-1.654	-0.793	-1.142	<i>-1.681</i>	3.293	1.646
02	Submerged communities in brackish waters	2.156	-4.142	0.	871	0.332	-1.420	5.247
03	Sublittoral and eulittoral zones of temperate seas	0.	996	-2.508	-0.	480	2.481	-0.
04	Submerged stonewort swards	1.042	-1.767	0.096	-1.127	-1.561	3.449	0.706
05	Floating or submerged rooted plants in fresh waters	0.425	-1.139	-1.345	0.499	<i>-1.627</i>	3.176	2.782
06	Soakways and shallow, fluctuating standing waters	-0.034	-1.152	0.151	1.317	0.272	0.719	2.747
07	Spring vegetation of weakly basic waters	-1.459	1.442	-0.663	-0.333	0.647	-0.009	3.104
08	Swamps and fens	-0.790	0.054	-1.480	0.118	-0.910	3.446	5.055
09	Small sedges on wet to moist soils	-0.869	-0.208	0.173	-0.279	1.166	0.885	5.841
10	Mires developing on mesotrophic peats	1.444	-2.296	<i>1.756</i>	-0.289	-0.751	-0.179	1.415
11	Bog vegetation of deep, wet peats	0.407	-1.974	0.937	1.125	-0.682	0.776	4.573
12	Strongly trampled vegetation in moist places	-3.994	<i>1.824</i>	-0.551	0.515	3.086	4.813	4.090
13	Stonecrop communities of weathered calcareous rocks	-3.976	2.181	1.395	-1.531	2.364	4.128	3.078
14	Swards on sandy soils	-4.351	2.457	0.210	1.412	<i>1.368</i>	3.668	4.921
15	Chalk grasslands	-4.714	3.451	-0.104	0.043	1.152	3.351	4.514
16	Meadows and pastures of well-drained soils	-3.418	2.406	0.822	-0.943	0.276	2.159	5.811
17	Fringe communities	-2.354	1.458	0.242	-1.538	2.012	2.588	3.586
18	Woodland margin and ride vegetation in drier situations	-3.926	3.402	-0.849	0.159	1.347	2.577	2.608

19	Unfertilized mat-grass pastures at lower elevations	-2.397	0.518	-0.426	2.316	1.390	<i>1.956</i>	4.758
20	Heathlands	-5.387	4.334	0.302	1.500	0.798	1.757	4.265
21	Communities of crevices of sunny wells	-4.827	4.373	-1.486	0.318	0.268	4.402	2.848
22	Salt-marsh and strandlines sometimes mixed with sand	-2.610	0.932	-0.371	-2.232	2.349	5.615	4.472
23	Pioneer vegetation of coastal foredunes	-4.436	3.416	1.297	-3.429	1.408	4.148	5.414
24	Perennial cord grasses on intertidal mud and sand	-3.002	2.414	-1.656	-1.424	<i>1.634</i>	4.825	3.701
25	Annual succulent halophytes, periodically flooded	-1.875	-1.835	1.413	1.522	5.297	2.251	4.233
26	Inundated and inland salt marsh ephemerals	-2.320	1.454	-0.504	-2.595	2.617	4.057	4.079
27	Ephemerals on bare or disturbed salt-marsh mud and sand	-3.268	1.460	0.308	-0.960	<i>1.877</i>	4.916	4.129
28	Therophytes on bare, periodically flooded ground	-2.400	1.447	-0.339	0.502	1.987	2.060	3.463
29	Heavily nutrient-loaded ruderal habitats	-0.702	-0.813	-2.245	-0.053	1.634	5.520	3.992
30	Arable weed communities	-4.702	2.426	-1.376	0.739	3.295	5.815	5.665
31	Xero-mesophilous ruderals on nutrient-rich soils	-4.810	2.875	-0.694	0.129	2.302	6.533	3.070
32	Tall-herb vegetation on moist fertile soils and peats	-0.798	0.057	-1.321	-0.549	0.274	3.392	4.128
33	Sunny and semi-shaded margins and clearings of woods	-2.370	1.462	-0.413	-1.317	1.032	3.195	3.464
34	Herbaceous forest-clearing communities on poor soils	-5.542	4.784	-1.057	0.680	1.093	3.431	3.388
35	Bramble underscrub of woodland edges and clearings	-4.254	3.429	-0.304	-1.398	-0.130	5.221	0.616
36	Willow scrub and woodland of mires	-1.461	1.434	-0.547	-0.370	-1.696	1.198	3.902
37	Hedges and scrub of mesotrophic, base-rich soils	-3.923	3.372	0.185	-0.301	-0.283	3.528	2.846
38	Woodland of river shoals and terraces	-1.989	1.107	-0.124	-1.058	0.009	4.039	2.884
39	Woodlands of swamps, fens and wet pastures	-0.070	0.361	-1.088	-0.843	-1.109	<i>1.355</i>	3.045
40	Birch-dominated swampy woodlands	-0.021	0.119	-0.366	-0.636	-0.973	0.639	2.857
41	Pine and juniper woodland communities of acid soils	-4.907	4.054	1.220	-0.540	1.406	2.235	2.544

42	Acidophilous oak, birch, or beech forests	-3.104	2.452	-0.085	-0.715	0.447	2.558	3.257
43	Broadleaved woodlands on lime-rich and neutral mull soils	-1.485	2.411	-0.882	-0.896	-1.318	0.252	2.862
