

## Supplementary Material

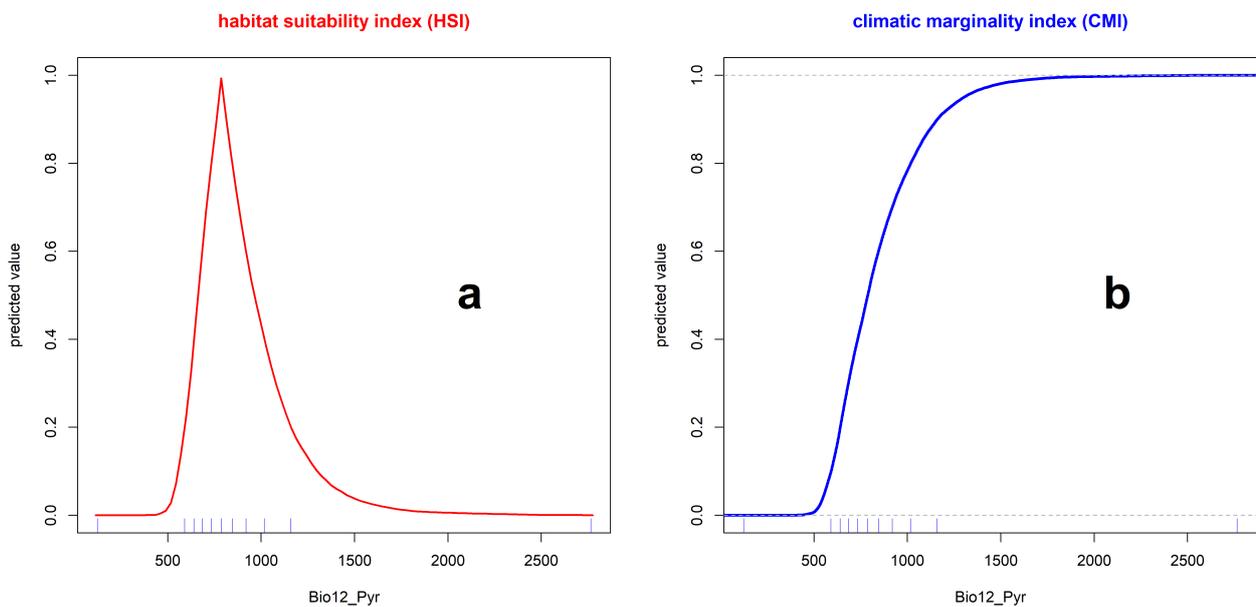
**Tab. S1** - Range of *Fagus sylvatica* characterised by vigintiles of selected bioclimatic variables (WorldClim.org – Fick & Hijmans 2017).

Percentile (%)	Tyr	Tmin	Twq	Tmax	Pyr	Pwq
0	2.36	-11.30	10.55	15.50	123	23
5	5.78	-7.70	14.32	20.10	556	131
10	6.61	-6.80	15.08	20.80	591	153
15	7.08	-6.30	15.55	21.30	618	168
20	7.40	-5.80	15.88	21.70	640	180
25	7.69	-5.40	16.17	22.10	661	191
30	7.95	-5.10	16.38	22.40	684	199
35	8.19	-4.70	16.58	22.60	707	206
40	8.40	-4.30	16.77	22.90	734	212
45	8.61	-3.90	16.97	23.10	761	217
50	8.85	-3.60	17.15	23.30	787	224
55	9.10	-3.20	17.33	23.60	814	231
60	9.34	-2.80	17.55	23.90	845	239
65	9.60	-2.40	17.80	24.20	880	247
70	9.88	-1.90	18.10	24.60	919	256
75	10.20	-1.30	18.43	24.90	964	266
80	10.50	-0.80	18.80	25.30	1017	277
85	10.85	-0.30	19.23	25.80	1079	293
90	11.25	0.60	19.72	26.40	1159	322
95	11.91	1.60	20.45	27.20	1302	376
100	16.25	6.60	24.88	32.80	2765	622

**Tab. S2** - Range of *Fagus orientalis* characterised by vigintiles of selected bioclimatic variables (WorldClim.org – Fick & Hijmans 2017).

Percentile (%)	Tyr	Tmin	Twq	Tmax	Pyr	Pwq
0	0.63	-13.20	9.13	14.60	215	19
5	5.56	-8.90	14.22	20.70	486	60
10	6.59	-7.70	15.20	21.80	534	79
15	7.34	-6.70	15.95	22.50	569	93
20	7.90	-6.00	16.50	23.00	594	104
25	8.35	-5.40	16.95	23.30	616	111
30	8.75	-4.90	17.38	23.70	639	118
35	9.13	-4.30	17.78	24.10	661	129
40	9.54	-3.80	18.17	24.40	687	139
45	9.96	-3.30	18.58	24.70	713	148
50	10.38	-2.80	18.93	25.00	739	156
55	10.74	-2.30	19.32	25.30	767	170
60	11.10	-1.90	19.70	25.60	802	194
65	11.42	-1.50	20.05	25.90	851	217
70	11.68	-1.10	20.38	26.20	917	248
75	12.00	-0.60	20.70	26.50	1001	279
80	12.42	-0.10	20.98	26.80	1134	304
85	12.82	0.50	21.27	27.20	1309	324
90	13.28	1.17	21.70	28.00	1493	339
95	13.83	1.90	22.52	29.00	1619	374
100	17.64	4.90	27.17	33.60	2225	542

**Fig. S1** - Habitat suitability (HSI, a) and climatic marginality (CMI, b) vs. annual precipitation (Bio12\_Pyr) for *Fagus sylvatica*. While the HSI-curve is unimodal involving identical values at the rear edge with low precipitation and the leading edge with high precipitation, the CMI increases monotonically towards the leading edge. Both response curves are based on the quantile distribution (BIOCLIM algorithm). (a): based on the version of Hijmans et al. (2017); (b): uses the CMI developed in this study. Rug marks indicate quantile distribution by decile.



**Fig. S2** - Habitat suitability (HSI) for *Fagus sylvatica* in the study area Southern Germany according to the BIOCLIM algorithm (Hijmans et al. 2017) based on the quantile distribution of annual mean temperature (Tyr) and annual precipitation (Pyr) within the entire range of the species distribution (Caudullo et al. 2017). In contrast to CMI (cf. Fig. 3a) HSI makes it impossible to distinguish between low values due to wet/cold conditions on the one hand and warm/dry condition at the other hand. The position of cities is given as black letters for geographic orientation (D=Dresden, E=Erfurt, F=Freiburg, K=Karlsruhe, L=Leipzig, M=Munich, N=Nuremberg, W=Wurzburg).

