Model 1: Null model

$$Growth = PotGrowth + \varepsilon$$

Model 2: Size effect

$$Growth = PotGrowth + size.effect + \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

Model 3: Size + Competition

$$Growth = PotGrowth + size.effect + comp.effect + \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot NCI^D)$$

Model 4: Size + Competition (competition modulated by size)

$$Growth = PotGrowth + size.effect + comp.effect + \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot DBH^{\gamma} \cdot NCI^D)$$

Model 8: Size + Competition (species-specific competitive effect)

$$Growth = PotGrowth + size.effect + comp.effect + \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \lambda_{ij} \cdot \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot DBH^{\gamma} \cdot NCI^{D})$$

Model 9: Size + Competition (intra- vs interspecific competitive effect)

$$Growth = PotGrowth + size.effect + comp.effect + \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \lambda_{ij} \cdot \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot DBH^{\gamma} \cdot NCI^{D})$$

Model 10: Size + Competition (functional group-specific competitive effect)

$$Growth = PotGrowth + size.effect + comp.effect + \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \lambda_{ij} \cdot \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot DBH^{\gamma} \cdot NCI^{D})$$

Model 11: Size + Competition (shade tolerance-specific competitive effect)

$$Growth = PotGrowth + size.effect + comp.effect + \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \lambda_{ij} \cdot \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot DBH^{\gamma} \cdot NCI^{D})$$

Model 12: Size + Competition (sp-spec. lambda) + competition modulated by size and species richness)

$$Growth = PotGrowth + \ size.effect + \ comp.effect + \ \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \lambda_{ij} \cdot \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot \ DBH^{\gamma} \cdot Shannon^{\theta} \cdot NCI^{D})$$

Model 13: Size + Competition (sp-spec.lambda) + competition modulated by size and functional difference)

$$Growth = PotGrowth + \ size.effect + \ comp.effect + \ \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \lambda_{ij} \cdot \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot \ DBH^{\gamma} \cdot FDif^{\theta} \cdot NCI^{D})$$

Model 14: Size + Competition (sp-specif. lambda) + competition modulated by size and functional dispersion)

$$Growth = PotGrowth + \ size.effect + \ comp.effect + \ \varepsilon$$

$$size.effect = exp\left(-0.5 \cdot \frac{\mathrm{Ln}(D2009/X_0)}{X_b}\right)^2$$

$$NCI = \sum_{i=1}^{n}\sum_{j=1}^{s} \lambda_{ij} \cdot \frac{DBH_j^{\alpha}}{distance_{ij}^{\beta}}$$

$$comp.effect = \exp(-C \cdot \ DBH^{\gamma} \cdot FDis^{\theta} \cdot NCI^{D})$$

Table 1. Increase in AIC as compared to the best model for each species. The best model is given an AIC of 0, and the rest of models are compared with it.

			Size + competition effect (no lambda)			Size + competition effect (lambda)			Sps-spec. competition + diversity				
	Null model (1)	Size effect (2)	Base (3)	Size (4)	Sps-specific (8)	Intra vs Inter (9)	Funct Group (10)	Shade toler (11)	Species Richness (12)	Funct Diff (13)	Funct Disp (14)	R2	# param.
ABBA	425.5	387.9	394.5	394.3	4.1	305.7	43.1	170.5	8.9	**0.0**	135.2	0.51	29
ACPL	92.0	107.8	67.5	68.3	3.8	72.9	65.6	67.7	6.9	**0.0**	5.6	0.10	29
ACRU	344.4	337.9	227.9	230.0	237.3	219.6	**0.0**	111.3	11.0	2.9	4.1	0.15	14
ACSA	257.4	214.0	184.2	186.2	**0.0**	189.0	135.7	134.8	4.2	3.0	0.2	0.24	28
BEAL	683.7	644.2	481.4	452.1	7.7	310.6	84.5	479.9	6.1	**0.0**	9.3	0.30	29
BEPA	1678.4	1692.1	1308.5	1306.6	7.5	896.2	424.2	249.1	4.0	**0.0**	6.5	0.41	29
LADE	178.4	78.2	15.3	0.5	11.1	3.0	7.0	**0.0**	13.3	14.1	12.2	0.18	13
LALA	719.5	635.3	466.8	468.9	9.9	377.1	192.9	368.0	7.1	4.2	**0.0**	0.33	14
PIAB	285.3	248.9	253.6	254.1	3.2	125.3	89.5	129.0	2.2	**0.0**	81.2	0.52	29
PIGL	558.6	550.5	551.8	553.9	**0.0**	316.4	403.9	305.5	2.8	5.5	4.0	0.46	28
PIOM	143.6	150.5	145.4	147.3	84.3	66.2	78.1	**0.0**	82.5	81.7	76.4	0.50	13
PIRE	325.7	307.7	231.6	235.3	187.8	237.9	208.4	182.2	1.8	1.6	**0.0**	0.39	29
PIRU	319.8	305.4	310.0	311.6	0.1	161.2	86.2	109.0	**0.0**	1.6	144.0	0.40	29
PIST	1092.0	1064.4	1019.4	1016.7	613.3	985.3	707.3	1003.8	14.2	**0.0**	15.0	0.60	29
PISY	462.5	459.4	401.0	401.2	1.9	367.9	**0.0**	347.9	4.8	1.1	4.2	0.44	14
QURO	234.0	212.9	169.8	171.6	**0.0**	126.2	106.0	19.7	3.1	0.2	2.7	0.33	28
QURU	1271.0	1067.0	647.2	644.7	**0.0**	635.3	282.4	638.4	252.8	512.4	502.2	0.50	28
THOC	583.7	538.4	427.2	443.0	2.7	238.1	79.7	228.6	**0.0**	4.0	54.6	0.41	29
TICO	389.4	264.4	239.4	224.1	54.9	163.1	154.1	186.1	**0.0**	57.3	56.0	0.22	29