Chapman-Richards growth curves fitted parameters

Species	R^2	a (m)	b (years^{-1})	c	h_0	h_{max} (m)	t_{90} (years)	r (m.years^{-1})
Deciduous oak	0.94	23.7±1.4	0.013±0.003	1.3±0.2	1.96	25.6±1.4	192±31	0.24±0.03
Poplar	0.91	19.9±1.8	0.060±0.021	3.8±1.9	1.84	21.7±1.8	58±12	0.40±0.08
Beech	0.90	29.6±2.6	0.019±0.006	1.7±0.4	2.07	31.7±2.6	146±33	0.31±0.06
Chestnut	0.88	28.7±7.2	0.019±0.010	1.4±0.3	2.21	30.9±7.2	132±58	0.38±0.01
Locust	0.70	21.9±2.8	0.038±0.017	1.9±0.8	2.16	24.0±2.8	75±22	0.42±0.07
Maritime pine	0.95	22.1±2.0	0.031±0.007	2.0±0.4	1.95	24.1±2.0	92±15	0.34±0.02
Scotch pine	0.88	21.4±3.0	0.021±0.008	1.5±0.4	2.07	23.5±3.0	127±39	0.29±0.04
Douglas	0.96	20.9±0.9	0.065±0.008	4.4±0.9	1.97	22.8±0.9	56±4	0.42±0.03
Austrian pine	0.97	16.7±0.6	0.058±0.007	3.5±0.6	2.03	18.7±0.6	59±4	0.35±0.02
Fir/Spruce	0.92	30.0±2.8	0.094±0.019	24.3±14.0	1.94	31.9±2.8	57±6	0.29±0.16
Mixed pines	0.77	20.7±1.7	0.064±0.022	3.8±2.0	2.05	22.7±1.7	55±10	0.44±0.09
Mixed broadleaf	0.95	16.5±0.5	0.030±0.005	1.9±0.3	1.9	18.4±0.5	94±10	0.26±0.03
Mixed species	0.93	22.5±1.4	0.023±0.005	2.0±0.4	1.95	24.4±1.4	129±20	0.24±0.04
Mixed conifer	0.73	25.7±2.5	0.108±0.038	35.0±42.1	2.04	27.7±2.5	53±8	0.28±0.30

Table 1. Curve fitting results of PGC5. Coefficient of determination R2, fitted parameters a, b, and c, optimum offset h0, maximum height hmax , time t90 for which the growth curve has reached 90% of the maximum height, and early growth rate r. The uncertainty values are associated with the fitting process.

Species	R^2	a (m)	b (years^{-1})	c	h_0	h_{max} (m)	t_{90} (years)	r (m.years^{-1})
Deciduous oak	0.95	24.6±0.8	0.019±0.003	1.2±0.1	1.96	26.5±0.8	128±16	0.37±0.03
Poplar	0.85	19.5±1.4	0.128±0.053	4.1±2.9	1.84	21.4±1.4	28±6	0.66±0.02
Beech	0.92	29.9±1.6	0.023±0.005	1.4±0.3	2.07	32.0±1.6	114±19	0.43±0.05
Chestnut	0.94	21.6±1.0	0.044±0.007	1.4±0.2	2.21	23.9±1.0	57±6	0.54±0.01
Locust	0.76	21.2±1.9	0.036±0.013	1.2±0.3	2.16	23.3±1.9	66±16	0.51±0.02
Maritime pine	0.98	20.0±0.6	0.052±0.005	2.0±0.2	1.95	22.0±0.6	55±3	0.48±0.01
Scotch pine	0.89	20.0±1.3	0.031±0.009	1.4±0.3	2.07	22.1±1.3	81±15	0.40±0.03
Douglas	0.98	23.8±0.7	0.080±0.007	4.8±0.7	1.97	25.8±0.7	47±2	0.57±0.02
Austrian pine	0.98	17.4±0.5	0.056±0.005	2.2±0.2	2.03	19.5±0.5	53±3	0.44±0.01
Fir/Spruce	0.91	36.9±8.1	0.034±0.013	2.3±0.7	1.94	38.8±8.1	89±27	0.51±0.03
Mixed pines	0.78	20.5±1.5	0.058±0.018	2.2±0.9	2.05	22.5±1.5	51±9	0.52±0.04
Mixed broadleaf	0.94	19.9±0.5	0.035±0.006	1.3±0.2	1.9	21.8±0.5	70±7	0.44±0.02
Mixed species	0.91	21.8±0.9	0.032±0.007	1.6±0.3	1.95	23.7±0.9	85±12	0.39±0.04
Mixed conifer	0.67	26.9±3.6	0.053±0.022	3.7±2.2	2.04	28.9±3.6	66±16	0.45±0.14

Table 2. Curve fitting results of PGC25. CCoefficient of determination R2, fitted parameters a, b, and c,

optimum offset h0, maximum height hmax , time t90 for which the growth curve has reached 90% of the

maximum height, and early growth rate r. The uncertainty values are associated with the fitting process.

Species	R^2	a (m)	b (years^{-1})	c	h_0	h_{max} (m)	t_{90} (years)	r (m.years^{-1})
Deciduous oak	0.95	26.1±0.7	0.021±0.004	1.0±0.1	1.96	28.0±0.7	106±13	0.47±0.03
Poplar	0.81	19.7±1.3	0.261±0.086	9.5±8.2	1.84	21.5±1.3	17±2	0.71±0.18
Beech	0.90	32.2±2.1	0.018±0.005	1.0±0.2	2.07	34.3±2.1	122±27	0.53±0.04
Chestnut	0.94	22.7±0.9	0.040±0.007	0.9±0.1	2.21	24.9±0.9	54±6	0.617±0.001
Locust	0.70	21.6±2.3	0.024±0.014	0.6±0.2	2.16	23.7±2.3	70±28	0.560±0.001
Maritime pine	0.98	21.1±0.5	0.052±0.005	1.5±0.1	1.95	23.0±0.5	50±3	0.555±0.003
Scotch pine	0.90	22.6±1.4	0.026±0.007	0.9±0.2	2.07	24.7±1.4	84±17	0.49±0.02
Douglas	0.97	28.2±1.0	0.071±0.007	3.5±0.5	1.97	30.2±1.0	49±3	0.67±0.02
Austrian pine	0.87	19.6±1.6	0.034±0.010	0.9±0.2	2.03	21.7±1.6	62±13	0.502±0.002
Fir/Spruce	0.84	33.4±8.6	0.030±0.017	1.4±0.5	1.94	35.3±8.6	86±40	0.60±0.01
Mixed pines	0.75	20.5±1.5	0.051±0.017	1.4±0.5	2.05	22.5±1.5	49±10	0.56±0.02
Mixed broadleaf	0.93	22.7±0.6	0.026±0.005	0.8±0.1	1.9	24.6±0.6	75±9	0.54±0.02
Mixed species	0.92	23.3±0.8	0.031±0.006	1.1±0.2	1.95	25.2±0.8	77±10	0.50±0.03
Mixed conifer	0.62	26.7±4.0	0.042±0.021	1.8±0.9	2.04	28.7±4.0	67±22	0.55±0.07

Table 3. Curve fitting results of PGC50. Coefficient of determination R2, fitted parameters a, b, and c, optimum offset h0, maximum height hmax , time t90 for which the growth curve has reached 90% of the maximum height, and early growth rate r. The uncertainty values are associated with the fitting process.

Species	R^2	a (m)	b (years^{-1})	c	h_0	h_{max} (m)	t_{90} (years)	r (m.years^{-1})
Deciduous oak	0.90	25.9±1.4	0.012±0.004	0.6±0.1	5.18	31.1±1.4	137±32	0.60±0.02
Poplar	0.76	18.9±1.2	0.315±0.113	9.6±9.1	4.07	22.9±1.2	14±2	0.76±0.26
Beech	0.81	40.0±14.7	0.005±0.007	0.4±0.1	3.715	43.7±14.7	305±369	0.67±0.09
Chestnut	0.87	12.2±0.9	0.054±0.013	2.2±0.6	12.626	24.9±0.9	43±5	0.67±0.02
Locust	0.48	17.7±4.5	0.014±0.020	0.4±0.2	6.42	24.1±4.5	77±83	0.62±0.04
Maritime pine	0.94	22.6±1.6	0.022±0.006	0.6±0.1	3.88	26.5±1.6	77±17	0.61±0.01
Scotch pine	0.80	40.0±68.7	0.002±0.009	0.4±0.1	4.8	44.8±68.7	789±3976	0.58±0.61
Douglas	0.94	28.4±1.3	0.064±0.009	2.6±0.5	3.7	32.1±1.3	49±4	0.75±0.02
Austrian pine	0.56	30.9±148	0.001±0.020	0.3±0.2	4.31	35.2±148	976±19026	0.56±1.88
Fir/Spruce	0.76	22.9±1.8	0.074±0.025	1.8±0.7	2.99	25.8±1.8	37±8	0.716±0.002
Mixed pines	0.50	18.0±7.9	0.015±0.025	0.6±0.3	7.63	25.7±7.9	96±118	0.59±0.05
Mixed broadleaf	0.84	16.8±0.9	0.023±0.007	0.9±0.2	10.22	27.0±0.9	77±14	0.63±0.03
Mixed species	0.84	21.6±2.1	0.014±0.006	0.7±0.1	6.96	28.6±2.1	118±40	0.58±0.02
Mixed conifer	0.49	22.8±4.1	0.039±0.026	1.3±0.7	5.165	27.9±4.1	61±26	0.64±0.04

Table 4. Curve fitting results of PGC75. Coefficient of determination R2, fitted parameters a, b, and c, optimum offset h0, maximum height hmax , time t90 for which the growth curve has reached 90% of the maximum height, and early growth rate r. The uncertainty values are associated with the fitting process.

Species	R^2	a (m)	b (years^{-1})	c	h_0	h_{max} (m)	t_{90} (years)	r (m.years^{-1})
Deciduous oak	0.77	11.5±0.8	0.038±0.015	8.2±7.2	20.78	32.3±0.8	86±9	0.71±0.04
Poplar	0.30	6.9±1.3	0.575±0.711	100.0±5989	17.65	24.6±1.3	9±1	0.82±9.46
Beech	0.63	10.4±1.6	0.045±0.034	27.3±71.7	25.57	36.0±1.6	93±10	0.852±0.002
Chestnut	0.73	5.5±0.7	0.076±0.035	11.3±11.5	20.6796	26.1±0.7	38±2	0.74±0.06
Locust	0.08	11.3±135	0.001±0.067	0.2±0.3	14.8012	26.1±135	296±15697	0.68±2.10
Maritime pine	0.60	40.0±404	0.002±0.022	0.9±0.4	18.11	58.1±404	1122±13065	0.70±0.85
Scotch pine	0.69	7.0±0.6	0.120±0.061	100.0±215	19.29	26.3±0.6	45±4	0.66±0.07
Douglas	0.33	14.8±6.1	0.025±0.031	1.0±0.7	18.896	33.7±6.1	59±41	0.887±0.004
Austrian pine	0.33	4.5±1.2	0.119±0.114	100.0±397	18.86	23.3±1.2	41±4	0.64±0.08
Fir/Spruce	0.28	7.9±0.7	0.239±0.167	6.7±11.2	16.76	24.7±0.7	12±1	0.82±0.09
Mixed pines	0.08	40.0±1387	0.011±0.201	5.1±42.1	19.5536	59.6±1387	310±3732	0.65±0.04
Mixed broadleaf	0.68	9.2±0.7	0.052±0.024	4.4±3.3	20.14	29.4±0.7	48±7	0.78±0.08
Mixed species	0.61	8.0±0.8	0.142±0.094	100.0±294	19.08	27.1±0.8	39±4	0.70±0.18
Mixed conifer	0.06	16.7±181	0.003±0.066	0.7±1.1	19.926	36.6±181	377±5708	0.77±0.89

Table 5. Curve fitting results of PGC95. Coefficient of determination R2, fitted parameters a, b, and c, optimum offset h0, maximum height hmax , time t90 for which the growth curve has reached 90% of the maximum height, and early growth rate r. The uncertainty values are associated with the fitting process.
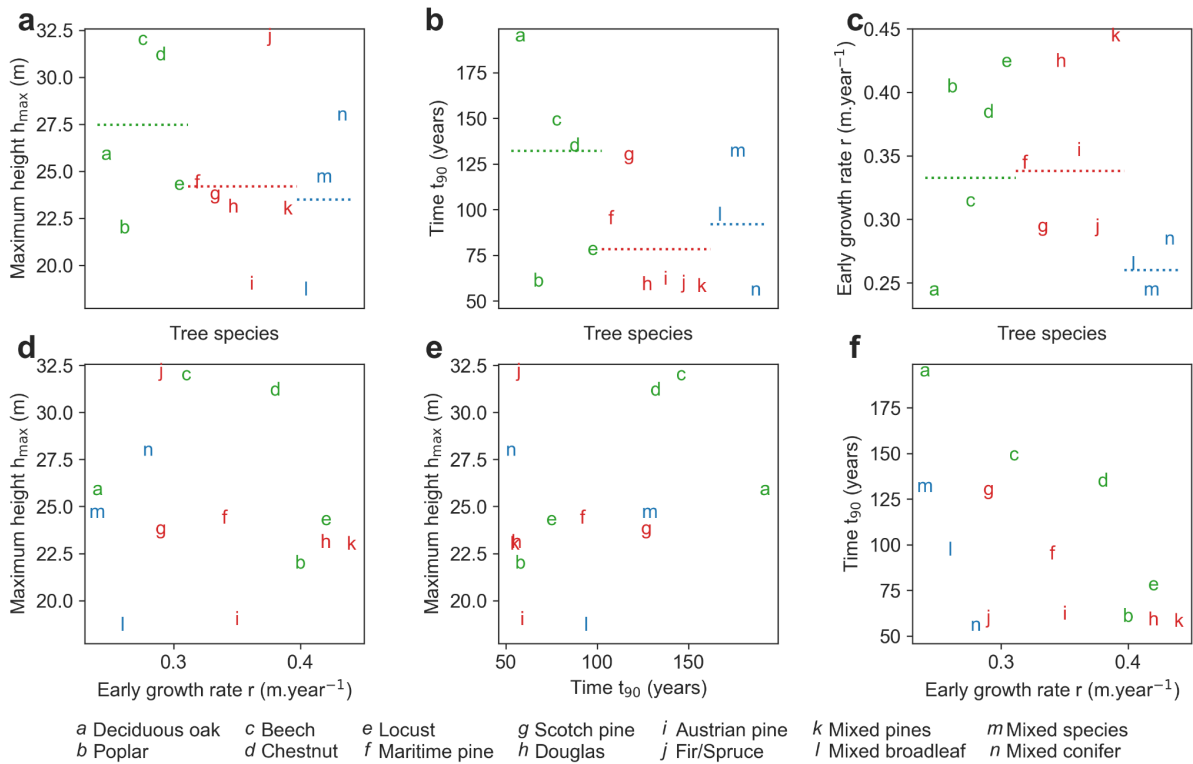
Figure 2. Growth metrics associated with the median growth curve PGC_5. Maximum height h_{max} (a), time t_{90} for which the growth curve has reached 90% of the maximum height (b), and early growth rate r (c) for broadleaf species (green), coniferous (red) or mixed species (blue) corresponding to the fitted parameters of the median growth curve PGC_{50}. The mean growth metrics for broadleaf, conifer, or mixed species are represented by a horizontal line. Maximum height h_{max} versus early growth rate r (d). Maximum height h_{max} versus time t_{90} (e). Time t_{90}, versus early growth rate r (f).

Figure 3. Growth metrics associated with the median growth curve PGC_{25}. Maximum height h_{max} (a), time t_{90} for which the growth curve has reached 90% of the maximum height (b), and early growth rate r (c) for broadleaf species (green), coniferous (red) or mixed species (blue) corresponding to the fitted parameters of the median growth curve PGC_{50}. The mean growth metrics for broadleaf, conifer, or mixed species are represented by a horizontal line. Maximum height h_{max} versus early growth rate r (d). Maximum height h_{max} versus time t_{90} (e). Time t_{90}, versus early growth rate r (f).
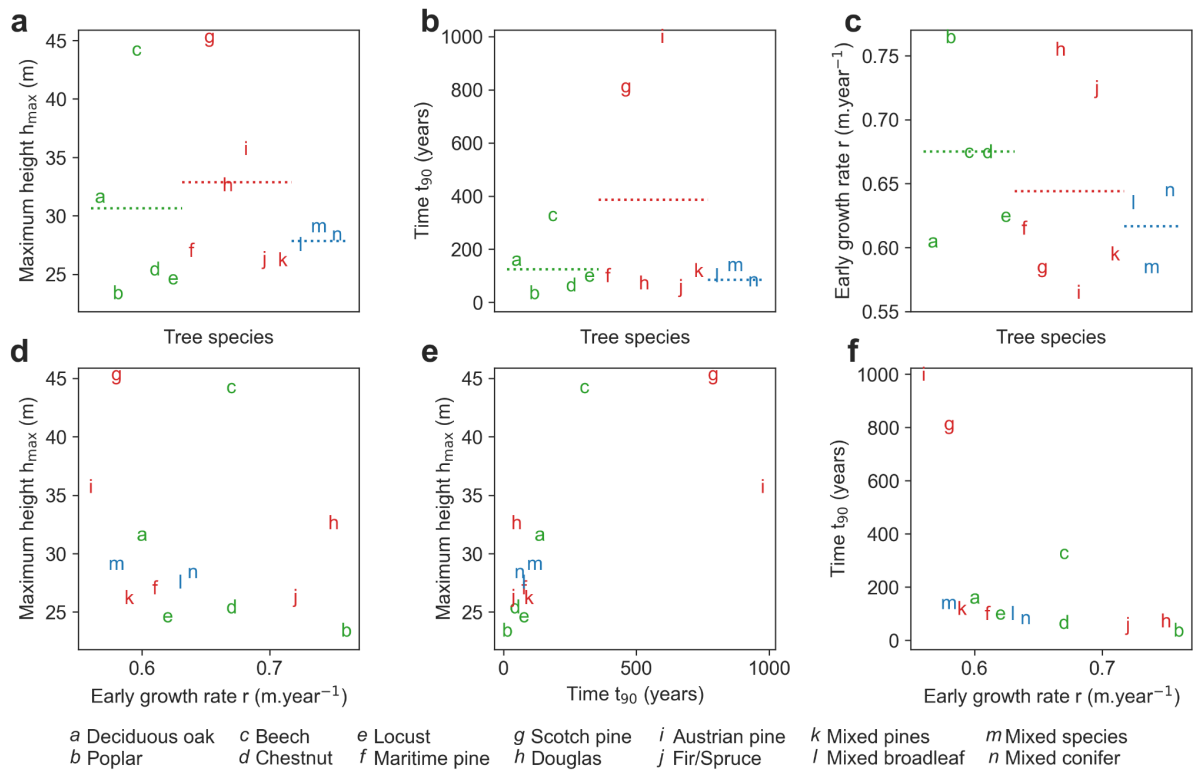
Figure 4. Growth metrics associated with the median growth curve PGC_{75}. Maximum height h_{max} (a), time t_{90} for which the growth curve has reached 90% of the maximum height (b), and early growth rate r (c) for broadleaf species (green), coniferous (red) or mixed species (blue) corresponding to the fitted parameters of the median growth curve PGC_{50}. The mean growth metrics for broadleaf, conifer, or mixed species are represented by a horizontal line. Maximum height h_{max} versus early growth rate r (d). Maximum height h_{max} versus time t_{90} (e). Time t_{90}, versus early growth rate r (f).
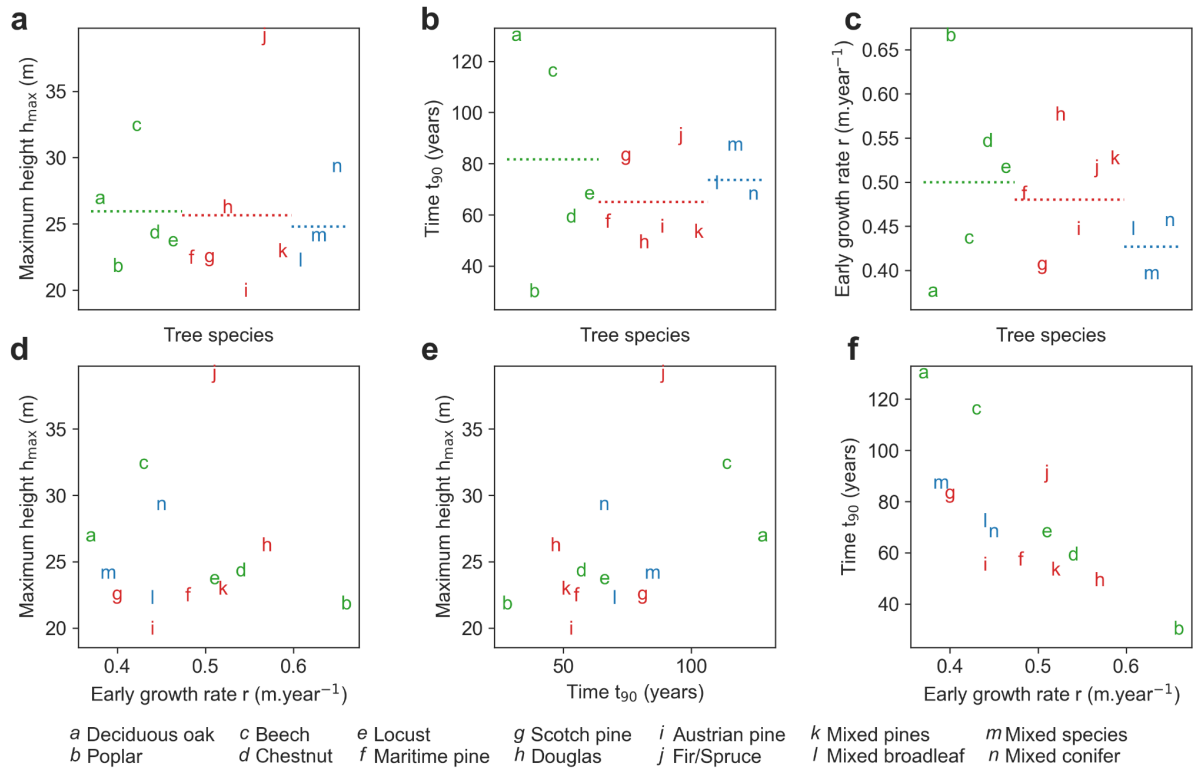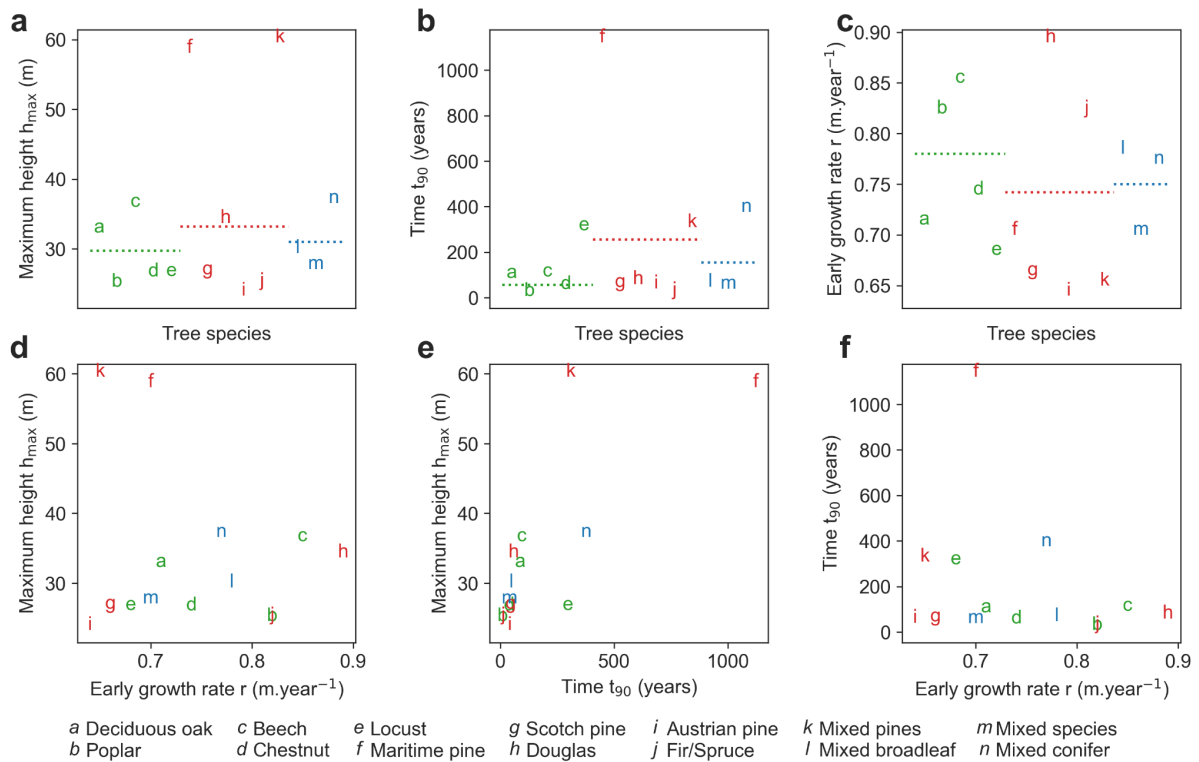
Figure 5. Growth metrics associated with the median growth curve PGC$_{95}$. Maximum height h$_{max}$ (a), time t$_{90}$ for which the growth curve has reached 90% of the maximum height (b), and early growth rate r (c) for broadleaf species (green), coniferous (red) or mixed species (blue) corresponding to the fitted parameters of the median growth curve PGC$_{50}$. The mean growth metrics for broadleaf, conifer, or mixed species are represented by a horizontal line. Maximum height h$_{max}$ versus early growth rate r (d). Maximum height h$_{max}$ versus time t$_{90}$ (e). Time t$_{90}$, versus early growth rate r (f).