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Validation of demographic equilibrium theory against tree-size distributions and biomass density in Amazonia

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Contents

List of Tables

1 Tables

Table S1: Coefficients for Allometry Equation from Feldpausch 2012

Region	a_h	b_h	c_h
All S.America	42.574	0.0482	0.8307
Western Regions	46.263	0.0876	0.6072
Brazilian Shield	227.35	0.0139	0.555
Guyana Shield	42.845	0.0433	0.9372
Eastern-Central	48.131	0.0375	0.8228

Table S2: Principal Investigators of Data Collection Teams for Each Forest Plot Used

Plot Code	Principal Investigators
ALF_01	Jon Lloyd, Ted Feldpausch
ALF_02	Jon Lloyd, Ted Feldpausch
ALM_01	John Terborgh, Oliver Phillips, Roel Brienen
ALP_01	Abel Monteagudo-Mendoza, Javier Silva Espejo, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen, Yadvinder Malhi
ALP_02	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen
ALP_30	Abel Monteagudo-Mendoza, Javier Silva Espejo, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen, Yadvinder Malhi
ALP_40	Abel Monteagudo-Mendoza, Freddy Ramirez Arevalo, Oliver Phillips, Roel Brienen
AMA_02	Esteban Álvarez Dávila, Irina Mendoza Polo, Oliver Phillips
BAC_01	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
BAC_02	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
BAC_03	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
BAC_04	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
BAC_05	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
BAC_06	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
BEE_01	Alexander Parada Gutierrez, Luzmila Arroyo, Oliver Phillips
BEE_05	Alexander Parada Gutierrez, Luzmila Arroyo, Oliver Phillips
BES_01	Esteban Álvarez Dávila, Irina Mendoza Polo, Oliver Phillips
BET_01	Esteban Álvarez Dávila, Irina Mendoza Polo, Oliver Phillips
BET_02	Esteban Álvarez Dávila, Irina Mendoza Polo, Oliver Phillips
BOG_01	Abel Monteagudo-Mendoza, David Neill, Oliver Phillips
BOG_02	David Neill, Oliver Phillips
CAI_04	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
CAX_01	Oliver Phillips, Samuel Almeida
CAX_02	Oliver Phillips, Samuel Almeida
CAX_06	Luiz Aragão, Oliver Phillips, Samuel Almeida, Yadvinder Malhi
CAX_08	Luiz Aragão, Oliver Phillips, Samuel Almeida, Yadvinder Malhi
CLA_03	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
CLA_04	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
CRP_02	Alejandro Araujo-Murakami, Luzmila Arroyo, Oliver Phillips, Roel Brienen
CUZ_01	Abel Monteagudo-Mendoza, Oliver Phillips
CUZ_02	Abel Monteagudo-Mendoza, Oliver Phillips
CUZ_03	Abel Monteagudo-Mendoza, Oliver Phillips
CUZ_04	Abel Monteagudo-Mendoza, Oliver Phillips
DIV_01	Esteban Álvarez Dávila, Irina Mendoza Polo, Oliver Phillips
DOI_01	Marcos Silveira, Oliver Phillips, Ted Feldpausch
ECE_01	Esteban Álvarez Dávila, Irina Mendoza Polo, Oliver Phillips
ECE_02	Esteban Álvarez Dávila, Irina Mendoza Polo
ELD_01	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
ELD_02	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
ELD_03	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
ELD_04	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
ESP_01	Miles Silman, William Farfan-Rios
HCC_21	Luzmila Arroyo, Oliver Phillips, Roel Brienen
HCC_22	Alejandro Araujo-Murakami, Luzmila Arroyo, Oliver Phillips, Roel Brienen
HCC_24	Alejandro Araujo-Murakami, Luzmila Arroyo, Oliver Phillips, Roel Brienen
JAS_02	David Neill, Oliver Phillips, Roel Brienen
JAS_03	David Neill, Roel Brienen
JAS_04	David Neill, Oliver Phillips, Roel Brienen
JEN_11	Abel Monteagudo-Mendoza, Eurídice Honorio Coronado, Oliver Phillips, Roel Brienen

Plot Code	Principal Investigators
JEN_12	Eurídice Honorio Coronado, Oliver Phillips, Roel Brienen
JFR_01	Ted Feldpausch
JFR_02	Ted Feldpausch
JFR_03	Ted Feldpausch
JFR_04	Ted Feldpausch
JFR_05	Ted Feldpausch
JFR_06	Ted Feldpausch
JFR_07	Ted Feldpausch
JFR_08	Ted Feldpausch
JFR_09	Ted Feldpausch
KAL_01	Esteban Álvarez Dávila, Irina Mendoza Polo, Oliver Phillips
LAS_02	Fernando Cornejo Valverde, Nigel Pitman, Oliver Phillips
LFB_01	Alejandro Araujo-Murakami, Luzmila Arroyo, Oliver Phillips, Roel Brienen, Timothy Killeen
LFB_02	Alejandro Araujo-Murakami, Luzmila Arroyo, Oliver Phillips, Roel Brienen
LSL_01	Alejandro Araujo-Murakami, Luzmila Arroyo, Oliver Phillips, Roel Brienen
LSL_02	Alejandro Araujo-Murakami, Luzmila Arroyo, Oliver Phillips, Roel Brienen
MIN_01	Marcos Silveira, Oliver Phillips, Ted Feldpausch
MNU_05	John Terborgh, Oliver Phillips, Roel Brienen
MNU_06	Fernando Cornejo Valverde, John Terborgh, Oliver Phillips, Roel Brienen
MTH_01	Marcos Silveira, Oliver Phillips, Ted Feldpausch
PNY_01	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
PNY_02	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
PNY_03	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
PNY_04	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
PNY_05	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
PNY_06	Abel Monteagudo-Mendoza, Nadir Pallqui Camacho, Oliver Phillips, Rodolfo Vasquez Martinez
PNY_07	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
POR_01	Marcos Silveira, Oliver Phillips, Ted Feldpausch
POR_02	Oliver Phillips, Ted Feldpausch
PTN_01	Esteban Álvarez Dávila, Oliver Phillips, Zorayda Restrepo Correa
RAS_01	Esteban Álvarez Dávila, Irina Mendoza Polo, Oliver Phillips
RCS_01	Abel Monteagudo-Mendoza, Luis Valenzuela Gamarra, Oliver Phillips
RCS_02	Abel Monteagudo-Mendoza, Luis Valenzuela Gamarra, Oliver Phillips
RCS_03	Abel Monteagudo-Mendoza, Luis Valenzuela Gamarra, Oliver Phillips
RET_05	Alejandro Araujo-Murakami, Guido Pardo, Oliver Phillips, Roel Brienen, Vincent Vos
RET_06	Alejandro Araujo-Murakami, Guido Pardo, Oliver Phillips, Roel Brienen, Vincent Vos
RET_08	Alejandro Araujo-Murakami, Guido Pardo, Oliver Phillips, Roel Brienen, Vincent Vos
RET_09	Alejandro Araujo-Murakami, Guido Pardo, Oliver Phillips, Roel Brienen, Vincent Vos
RFH_01	Marcos Silveira, Oliver Phillips, Ted Feldpausch
RIO_01	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
RIO_02	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
RST_01	Jorcely Barroso, Marcos Silveira, Oliver Phillips, Ted Feldpausch
SCT_01	Alexander Parada Gutierrez, Casimiro Mendoza, Luzmila Arroyo, Oliver Phillips
SCT_06	Alexander Parada Gutierrez, Casimiro Mendoza, Luzmila Arroyo, Oliver Phillips
SEU_01	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
SEU_02	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
SEU_03	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
SEU_04	Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
SEU_05	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
SEU_06	Emilio Vilanova Torre, Geertje van der Heijden, Hirma Ramírez-Angulo, Oliver Phillips
SUC_01	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen
SUC_02	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen
SUC_03	Abel Monteagudo-Mendoza, Roel Brienen
SUC_04	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen
SUC_05	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen
TAM_01	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Ted Feldpausch, Timothy Baker
TAM_02	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Ted Feldpausch
TAM_03	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Ted Feldpausch
TAM_04	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Ted Feldpausch
TAM_05	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
TAM_06	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
TAM_07	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Ted Feldpausch
TAM_08	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez
TAM_09	Javier Silva Espejo, Oliver Phillips, Yadvinder Malhi
TAN_03	Beatriz Marimon, Ben Hur Marimon Junior, Oliver Phillips, Ted Feldpausch
TAN_04	Beatriz Marimon, Ben Hur Marimon Junior, Jon Lloyd, Ted Feldpausch
TIP_01	Abel Monteagudo-Mendoza, Oliver Phillips
TIP_02	David Neill, Oliver Phillips
TIP_03	Abel Monteagudo-Mendoza, Oliver Phillips
YAN_01	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen
YAN_02	Abel Monteagudo-Mendoza, Oliver Phillips, Rodolfo Vasquez Martinez, Roel Brienen
ZAR_02	Eliana Jimenez-Rojas, Maria Cristina Peñuela-Mora , Oliver Phillips
ZAR_03	Eliana Jimenez-Rojas, Maria Cristina Peñuela-Mora , Oliver Phillips
ZAR_04	Eliana Jimenez-Rojas, Maria Cristina Peñuela-Mora , Oliver Phillips

Table S3: Results from fitting each forest plot individually for trunk diameter data. n_L is the value of the distribution at lower truncation point $D_L = 10cm$ and is calculated from the fitted parameters.

	Country	Allom Region	Num	Plot	Mean	1 Param		2 Param			MST
Plot			Trees	Area	DBH	μ_1	n_L	μ_1	phi	n_L	n_L
ALF_01	Brazil	Brazilian Shield	513	1.00	19.99	0.266	63.38	0.396	0.471	68.68	56.20
ALF_02	Brazil	Brazilian Shield	564	1.00	21.14	0.239	62.63	0.167	0.211	58.07	62.31
ALM_01	Peru	S.Western	1324	2.00	20.97	0.242	74.38	0.155	0.181	67.79	72.52
ALP_01	Peru	N.Western	589	1.00	20.08	0.266	72.70	0.505	0.556	82.85	64.67
ALP_02	Peru	N.Western	621	1.00	19.79	0.269	77.65	0.294	0.364	79.01	69.35
ALP_30	Peru	N.Western	477	1.00	21.50	0.232	51.29	0.126	0.126	45.06	54.54
ALP_40	Peru	N.Western	1193	1.00	16.13	0.406	224.71	0.387	0.316	223.08	148.19
AMA_02	Colombia	N.Western	433	1.00	23.17	0.208	41.62	0.101	0.090	35.34	45.74
BAC_01	Venezuela	N.Western	83	0.25	29.45	0.150	22.81	0.028	-0.192	14.86	35.22
BAC_02	Venezuela	N.Western	74	0.25	30.30	0.143	19.30	0.004	-0.757	7.85	32.49
BAC_03	Venezuela	N.Western	60	0.25	35.91	0.121	13.10	0.041	0.007	9.63	23.65
BAC_04	Venezuela	N.Western	75	0.25	28.22	0.165	22.55	0.170	0.343	22.72	30.72
BAC_05	Venezuela	N.Western	98	0.25	22.01	0.228	41.22	0.146	0.183	37.49	43.94
BAC_06	Venezuela	N.Western	59	0.25	33.42	0.130	13.88	0.023	-0.193	8.66	24.49
BEE_01	Bolivia	S.Western	574	1.00	20.43	0.261	69.44	0.653	0.649	84.09	62.34
BEE_05	Bolivia	S.Western	545	1.00	21.67	0.232	58.71	0.275	0.392	60.94	59.30
BES_01	Colombia	N.Western	306	1.00	22.83	0.217	30.79	0.394	0.533	35.30	33.68
BET_01	Colombia	N.Western	832	1.03	17.22	0.350	130.63	0.284	0.258	126.17	96.03
BET_02	Colombia	N.Western	768	1.03	17.26	0.347	119.48	0.207	0.147	109.66	87.24
BOG_01	Ecuador	N.Western	539	1.00	22.08	0.227	56.67	0.330	0.461	61.61	58.33
BOG_02	Ecuador	N.Western	675	1.00	18.92	0.293	91.78	0.368	0.414	95.85	74.99
CAI_04	Venezuela	N.Western	66	0.25	30.40	0.144	17.51	0.063	0.075	14.01	28.77
CAX_01	Brazil	Eastern-Central	524	1.00	23.65	0.201	49.00	0.156	0.248	46.17	56.87
CAX_02	Brazil	Eastern-Central	523	1.00	22.76	0.213	51.81	0.165	0.246	48.87	56.64
CAX_06	Brazil	Eastern-Central	437	1.00	25.08	0.185	37.59	0.157	0.278	36.07	47.89
CAX_08	Brazil	Eastern-Central	558	1.00	20.61	0.255	65.94	0.360	0.452	70.88	58.73
CDM_01	Peru	S.Western	520	1.00	21.09	0.249	60.20	0.870	0.759	78.83	55.71
CLA_03	Venezuela	N.Western	125	0.26	22.56	0.217	48.52	0.191	0.290	47.16	55.36
CLA_04	Venezuela	N.Western	158	0.25	20.86	0.258	73.84	0.212	0.267	71.09	68.66
CRP_02	Bolivia	Brazilian Shield	503	1.00	20.97	0.245	57.14	0.311	0.415	60.09	57.34
CUZ_01	Peru	S.Western	433	1.00	20.91	0.252	50.67	0.749	0.705	63.97	46.69
CUZ_02	Peru	S.Western	555	1.00	20.54	0.258	66.47	0.550	0.593	77.88	58.52
CUZ_03	Peru	S.Western	504	1.00	20.98	0.247	57.76	0.409	0.506	64.27	55.95
CUZ_04	Peru	S.Western	599	1.00	20.50	0.256	71.05	0.373	0.464	76.85	66.44
DIV_01	Colombia	N.Western	752	1.10	17.55	0.339	107.39	0.444	0.430	112.49	77.52
DOI_01	Brazil	S.Western	486	1.00	21.21	0.245	55.06	0.416	0.514	61.59	52.37
ECE_01	Colombia	N.Western	393	1.00	20.65	0.252	46.06	0.427	0.514	51.39	45.21
ECE_02	Colombia	N.Western	369	1.00	24.35	0.204	34.95	0.893	0.817	50.16	39.32
ELD_01	Venezuela	Guyana Shield	117	0.25	25.05	0.187	40.55	0.176	0.313	39.95	52.96
ELD_02	Venezuela	Guyana Shield	134	0.25	24.99	0.193	47.35	0.228	0.388	49.25	59.87
ELD_03	Venezuela	Guyana Shield	148	0.25	18.59	0.307	83.52	0.059	-0.254	62.83	69.73
ELD_04	Venezuela	Guyana Shield	152	0.25	21.38	0.234	65.70	0.060	-0.133	49.51	70.52
ESP_01	Peru	S.Western	837	1.00	18.43	0.302	117.27	0.100	-0.061	96.09	91.60
HCC_21	Bolivia	Brazilian Shield	557	1.00	20.06	0.268	69.16	0.642	0.636	82.69	61.00
HCC_22	Bolivia	Brazilian Shield	616	1.00	19.19	0.289	82.55	0.575	0.575	94.40	66.89
HCC_24	Bolivia	Brazilian Shield	659	1.00	19.32	0.283	86.53	0.442	0.489	94.37	74.05
JAS_02	Ecuador	N.Western	752	1.00	18.72	0.297	103.62	0.255	0.279	100.71	86.18
JAS_03	Ecuador	N.Western	622	1.00	20.89	0.244	70.57	0.193	0.251	67.14	69.52
JAS_04	Ecuador	N.Western	794	1.00	20.69	0.250	91.99	0.250	0.334	92.04	87.62
JEN_11	Peru	N.Western	595	1.00	20.08	0.263	72.55	0.301	0.380	74.55	67.20
JEN_12	Peru	N.Western	744	1.00	18.63	0.297	102.42	0.120	0.013	86.85	86.10
JFR_01	Brazil	Brazilian Shield	472	0.93	21.60	0.231	54.45	0.163	0.215	50.51	56.46
JFR_02	Brazil	Brazilian Shield	241	0.53	20.64	0.256	54.51	0.611	0.632	65.45	50.62
JFR_03	Brazil	Brazilian Shield	573	1.02	21.23	0.242	62.89	0.378	0.485	69.17	60.19
JFR_04	Brazil	Brazilian Shield	569	1.00	20.29	0.261	69.01	0.466	0.533	77.73	62.07
JFR_05	Brazil	Brazilian Shield	555	1.00	21.09	0.243	62.49	0.291	0.395	64.93	61.97
JFR_06	Brazil	Brazilian Shield	507	1.00	19.32	0.279	65.63	0.175	0.170	60.01	56.96
JFR_07	Brazil	Brazilian Shield	476	1.02	20.83	0.246	53.01	0.210	0.280	51.31	50.96
JFR_08	Brazil	Brazilian Shield	505	1.00	20.72	0.248	58.22	0.218	0.288	56.67	56.16
JFR_09	Brazil	Brazilian Shield	604	0.97	18.99	0.289	83.24	0.273	0.312	82.30	68.59
KAL_01	Colombia	N.Western	365	1.00	23.50	0.206	34.87	0.240	0.385	36.14	38.57
LAS_02	Peru	S.Western	592	1.00	20.53	0.254	69.88	0.314	0.406	73.01	62.49
LFB_01	Bolivia	Brazilian Shield	564	1.00	19.69	0.283	73.96	1.735	0.961	107.02	61.82
LFB_02	Bolivia	Brazilian Shield	536	1.00	20.64	0.262	65.27	1.780	0.987	98.34	58.75
LSL_01	Bolivia	Brazilian Shield	505	1.00	18.55	0.306	71.73	0.610	0.577	81.58	55.49
LSL_02	Bolivia	Brazilian Shield	626	1.00	20.27	0.255	74.09	0.117	0.063	63.35	73.45
MIN_01	Brazil	S.Western	691	1.00	19.57	0.272	87.21	0.151	0.127	77.76	77.59
MNU_05	Peru	S.Western	1235	2.25	21.21	0.243	61.96	0.413	0.514	69.41	58.32
MNU_06	Peru	S.Western	1212	2.25	22.64	0.216	54.00	0.199	0.306	53.00	58.65

	Country	Allom Region	Num	Plot	Mean	1 Param		2 Param			MST
Plot			Trees	Area	DBH	μ_1	n_L	μ_1	phi	n_L	n_L
MTH_01	Brazil	S.Western	501	1.00	19.69	0.270	62.78	0.184	0.199	58.21	54.57
PNY_01	Peru	S.Western	558	1.00	17.71	0.326	84.33	0.069	-0.224	64.82	70.84
PNY_02	Peru	S.Western	634	1.00	20.06	0.269	79.16	0.598	0.609	93.21	66.40
PNY_03	Peru	S.Western	739	1.00	18.00	0.320	109.77	0.283	0.290	107.43	84.69
PNY_04	Peru	S.Western	524	1.00	20.27	0.258	62.73	0.239	0.306	61.75	57.69
PNY_05	Peru	S.Western	619	1.00	20.12	0.264	75.96	0.443	0.512	84.36	66.79
PNY_06	Peru	S.Western	464	1.00	21.88	0.227	48.92	0.200	0.291	47.59	51.21
PNY_07	Peru	S.Western	508	1.00	20.37	0.254	59.82	0.146	0.141	53.45	58.31
POR_01	Brazil	S.Western	550	1.00	22.25	0.224	57.27	0.359	0.492	63.62	59.60
POR_02	Brazil	S.Western	520	1.00	20.25	0.257	61.99	0.163	0.176	56.57	57.82
PTN_01	Colombia	N.Western	551	1.00	18.17	0.312	79.81	0.166	0.108	71.32	65.36
RAS_01	Colombia	N.Western	654	1.03	20.99	0.242	70.92	0.156	0.183	64.73	67.83
RCS_01	Peru	S.Western	635	1.00	20.27	0.255	75.13	0.116	0.061	64.15	74.21
RCS_02	Peru	S.Western	758	1.00	18.70	0.294	103.61	0.125	0.029	88.50	93.72
RCS_03	Peru	S.Western	737	1.00	20.86	0.241	82.58	0.071	-0.088	64.18	80.64
RET_05	Bolivia	Brazilian Shield	597	1.00	19.84	0.269	74.43	0.301	0.373	76.14	64.06
RET_06	Bolivia	Brazilian Shield	524	1.00	20.47	0.259	62.94	0.496	0.557	72.07	55.88
RET_08	Bolivia	Brazilian Shield	505	1.00	20.56	0.257	60.24	0.492	0.556	68.98	53.63
RET_09	Bolivia	Brazilian Shield	474	1.00	21.57	0.235	51.73	0.318	0.436	55.24	50.76
RFH_01	Brazil	S.Western	380	1.00	21.96	0.230	40.53	0.398	0.519	45.78	40.96
RIO_01	Venezuela	Guyana Shield	138	0.25	23.40	0.203	51.94	0.066	-0.041	40.31	64.65
RIO_02	Venezuela	Guyana Shield	130	0.25	23.95	0.202	48.18	0.092	0.074	40.43	58.47
RST_01	Brazil	S.Western	538	1.00	22.21	0.219	54.57	0.073	-0.040	42.88	58.69
SCT_01	Bolivia	S.Western	576	1.00	19.81	0.268	71.76	0.282	0.350	72.46	66.49
SCT_06	Bolivia	S.Western	602	1.00	19.32	0.281	78.53	0.305	0.362	79.80	69.00
SEU_01	Venezuela	N.Western	245	0.25	19.48	0.280	126.15	0.345	0.406	131.30	110.33
SEU_02	Venezuela	N.Western	286	0.25	17.71	0.335	176.00	0.289	0.280	171.59	135.72
SEU_03	Venezuela	N.Western	157	0.25	22.76	0.220	63.31	0.379	0.516	71.61	68.16
SEU_04	Venezuela	N.Western	182	0.25	21.76	0.238	79.11	0.483	0.573	92.10	78.15
SEU_05	Venezuela	N.Western	216	0.25	18.99	0.296	118.34	0.459	0.487	128.51	95.64
SEU_06	Venezuela	N.Western	168	0.25	20.46	0.257	80.19	0.403	0.488	88.02	73.40
SUC_01	Peru	N.Western	610	1.00	20.61	0.253	71.55	0.364	0.459	77.18	66.97
SUC_02	Peru	N.Western	591	1.00	20.94	0.244	66.85	0.204	0.273	64.43	67.03
SUC_03	Peru	N.Western	568	1.00	21.08	0.242	63.72	0.253	0.349	64.33	63.43
SUC_04	Peru	N.Western	606	1.00	21.11	0.242	68.12	0.308	0.415	71.68	66.78
SUC_05	Peru	N.Western	565	1.00	21.89	0.227	59.61	0.222	0.326	59.32	62.99
TAM_01	Peru	S.Western	620	1.00	20.94	0.242	69.65	0.131	0.123	61.32	67.67
TAM_02	Peru	S.Western	680	1.00	20.12	0.260	82.13	0.182	0.209	76.41	73.24
TAM_03	Peru	S.Western	368	0.58	25.66	0.173	50.86	0.005	-0.827	21.70	74.38
TAM_04	Peru	S.Western	302	0.42	19.85	0.268	89.45	0.281	0.350	90.31	77.59
TAM_05	Peru	S.Western	535	1.00	20.90	0.247	61.42	0.352	0.454	66.16	58.23
TAM_06	Peru	S.Western	660	1.00	21.51	0.233	71.48	0.181	0.246	67.67	69.53
TAM_07	Peru	S.Western	508	1.00	20.36	0.257	60.71	0.301	0.387	62.70	54.75
TAM_08	Peru	S.Western	511	1.00	20.06	0.267	63.09	0.322	0.398	65.49	55.17
TAM_09	Peru	S.Western	556	1.00	20.76	0.248	64.05	0.253	0.340	64.30	60.32
TAN_03	Brazil	Brazilian Shield	589	1.00	18.44	0.307	83.88	0.375	0.404	87.02	67.65
TAN_04	Brazil	Brazilian Shield	578	1.00	18.39	0.307	82.30	0.243	0.251	78.91	65.78
TIP_01	Ecuador	N.Western	553	1.00	20.50	0.257	66.02	0.503	0.564	75.90	58.71
TIP_02	Ecuador	N.Western	543	0.80	20.10	0.261	82.32	0.219	0.272	79.45	74.47
TIP_03	Ecuador	N.Western	471	1.00	22.01	0.230	50.19	0.548	0.627	60.91	52.64
YAN_01	Peru	N.Western	604	1.00	21.18	0.242	67.80	0.354	0.463	73.54	67.02
YAN_02	Peru	N.Western	590	1.00	21.84	0.230	62.93	0.302	0.426	66.79	64.77
ZAR_02	Colombia	N.Western	601	1.00	18.57	0.297	82.98	0.095	-0.073	67.42	75.59
ZAR_03	Colombia	N.Western	664	1.00	18.79	0.293	90.17	0.156	0.110	80.21	73.40
ZAR_04	Colombia	N.Western	600	1.00	20.96	0.240	66.95	0.091	-0.001	54.75	65.96

Table S4: Table of AIC and BIC Citerion for each of 3 models for fitting to trunk diameter data

	Log Likelihood			AIC			BIC		
Plot	MST	1 Param	2 Param	MST	1 Param	2 Param	MST	1 Param	2 Param
ALF_01	-1,717	-1,683	-1,682	66.2	**0.0**	**0.0574**	61.9	**0.0**	**4.3**
ALF_02	-1,951	-1,922	-1,921	57.5	**0.0**	**0.195**	53.1	**0.0**	**4.53**
ALM_01	-4,579	-4,494	-4,490	173.0	**4.12**	**0.0**	163.0	**0.0**	**1.07**
ALP_01	-1,966	-1,932	-1,929	69.6	**4.31**	**0.0**	60.9	**0.0**	**0.0635**
ALP_02	-2,066	-2,030	-2,030	71.3	**0.0**	**1.91**	66.9	**0.0**	**6.34**
ALP_30	-1,650	-1,643	-1,641	12.5	**1.85**	**0.0**	**6.48**	**0.0**	**2.32**
ALP_40	-3,473	-3,349	-3,349	247.0	**0.0**	**1.96**	242.0	**0.0**	**7.04**
AMA_02	-1,584	-1,549	-1,545	72.5	**4.78**	**0.0**	64.3	**0.711**	**0.0**
BAC_01	-333	-330	-327	**9.15**	**4.13**	**0.0**	**4.32**	**1.71**	**0.0**
BAC_02	-301	-299	-290	18.0	15.2	**0.0**	13.4	12.9	**0.0**
BAC_03	-260	-255	-253	**8.23**	**0.325**	**0.0**	**5.81**	**0.0**	**1.77**
BAC_04	-290	-289	-289	**0.713**	**0.0**	**2.0**	**0.0**	**1.6**	**5.92**
BAC_05	-341	-340	-340	**0.111**	**0.0**	**1.55**	**0.0**	**2.47**	**6.61**
BAC_06	-248	-245	-243	**6.83**	**2.69**	**0.0**	**2.67**	**0.615**	**0.0**
BEE_01	-1,925	-1,895	-1,888	71.2	12.3	**0.0**	62.5	**7.97**	**0.0**
BEE_05	-1,898	-1,874	-1,874	46.2	**0.0**	**1.58**	41.9	**0.0**	**5.88**
BES_01	-1,077	-1,076	-1,074	**1.61**	**1.44**	**0.0**	**0.0**	**3.55**	**5.84**
BET_01	-2,543	-2,473	-2,473	138.0	**0.0**	**1.39**	134.0	**0.0**	**6.12**
BET_02	-2,370	-2,292	-2,290	157.0	**1.57**	**0.0**	151.0	**0.0**	**3.07**
BOG_01	-1,889	-1,868	-1,867	39.3	**0.189**	**0.0**	34.8	**0.0**	**4.1**
BOG_02	-2,200	-2,141	-2,141	116.0	**0.0**	**1.19**	111.0	**0.0**	**5.7**
CAI_04	-266	-265	-264	**0.0**	**0.11**	**0.736**	**0.0**	**2.3**	**5.12**
CAX_01	-1,908	-1,890	-1,889	35.2	**0.0**	**1.04**	30.9	**0.0**	**5.3**
CAX_02	-1,876	-1,851	-1,851	47.8	**0.0**	**1.03**	43.5	**0.0**	**5.28**
CAX_06	-1,622	-1,618	-1,618	**5.42**	**0.0**	**1.66**	**1.34**	**0.0**	**5.74**
CAX_08	-1,915	-1,859	-1,858	109.0	**0.207**	**0.0**	105.0	**0.0**	**4.12**
CDM_01	-1,762	-1,741	-1,729	62.6	22.7	**0.0**	54.1	18.5	**0.0**
CLA_03	-438	-440	-440	**0.0**	**5.49**	**7.43**	**0.0**	**8.31**	13.1
CLA_04	-532	-526	-526	**8.81**	**0.0**	**1.87**	**5.74**	**0.0**	**4.93**
CRP_02	-1,703	-1,699	-1,698	**5.63**	**0.0**	**1.29**	**1.41**	**0.0**	**5.51**
CUZ_01	-1,464	-1,445	-1,437	49.5	14.0	**0.0**	41.3	**9.98**	**0.0**
CUZ_02	-1,887	-1,839	-1,834	101.0	**7.91**	**0.0**	92.1	**3.59**	**0.0**
CUZ_03	-1,712	-1,696	-1,695	30.2	**1.64**	**0.0**	24.3	**0.0**	**2.58**
CUZ_04	-2,020	-1,993	-1,992	51.4	**0.307**	**0.0**	46.7	**0.0**	**4.09**
DIV_01	-2,347	-2,261	-2,260	172.0	**0.0**	**0.898**	167.0	**0.0**	**5.52**
DOI_01	-1,665	-1,641	-1,639	47.0	**1.87**	**0.0**	40.9	**0.0**	**2.32**
ECE_01	-1,312	-1,313	-1,311	**0.0**	**3.16**	**2.46**	**0.0**	**7.14**	10.4
ECE_02	-1,310	-1,319	-1,303	10.2	30.2	**0.0**	**2.4**	26.2	**0.0**
ELD_01	-428	-432	-432	**0.0**	10.4	12.3	**0.0**	13.1	17.9
ELD_02	-483	-491	-491	**0.0**	16.6	18.5	**0.0**	19.5	24.3
ELD_03	-471	-464	-460	18.0	**4.69**	**0.0**	12.0	**1.7**	**0.0**
ELD_04	-525	-523	-520	**5.87**	**4.07**	**0.0**	**0.0**	**1.22**	**0.173**
ESP_01	-2,745	-2,631	-2,621	243.0	17.1	**0.0**	233.0	12.4	**0.0**
HCC_21	-1,853	-1,822	-1,817	67.5	**9.19**	**0.0**	58.9	**4.87**	**0.0**
HCC_22	-2,020	-1,963	-1,959	119.0	**5.77**	**0.0**	110.0	**1.35**	**0.0**
HCC_24	-2,154	-2,116	-2,114	76.2	**1.03**	**0.0**	70.7	**0.0**	**3.46**
JAS_02	-2,427	-2,375	-2,375	101.0	**0.0**	**1.63**	96.2	**0.0**	**6.25**
JAS_03	-2,129	-2,103	-2,103	48.9	**0.0**	**1.16**	44.5	**0.0**	**5.59**
JAS_04	-2,708	-2,665	-2,665	84.5	**0.0**	**2.0**	79.8	**0.0**	**6.68**
JEN_11	-1,985	-1,962	-1,961	44.0	**0.0**	**1.76**	39.6	**0.0**	**6.15**
JEN_12	-2,404	-2,353	-2,347	110.0	**8.78**	**0.0**	101.0	**4.17**	**0.0**
JFR_01	-1,646	-1,627	-1,626	34.9	**0.0**	**0.483**	30.8	**0.0**	**4.64**
JFR_02	-809	-801	-798	17.6	**3.34**	**0.0**	10.8	**0.0**	**0.145**
JFR_03	-1,975	-1,941	-1,939	67.3	**1.48**	**0.0**	61.4	**0.0**	**2.88**
JFR_04	-1,913	-1,878	-1,875	70.7	**3.35**	**0.0**	63.0	**0.0**	**0.989**
JFR_05	-1,897	-1,880	-1,880	30.5	**0.0**	**1.52**	26.2	**0.0**	**5.84**
JFR_06	-1,678	-1,638	-1,637	77.5	**0.527**	**0.0**	72.7	**0.0**	**3.7**
JFR_07	-1,635	-1,606	-1,606	55.0	**0.0**	**1.7**	50.8	**0.0**	**5.87**
JFR_08	-1,723	-1,698	-1,698	47.5	**0.0**	**1.78**	43.3	**0.0**	**6.0**
JFR_09	-1,982	-1,925	-1,925	111.0	**0.0**	**1.95**	107.0	**0.0**	**6.35**
KAL_01	-1,326	-1,306	-1,306	37.5	**0.0**	**1.73**	33.6	**0.0**	**5.63**
LAS_02	-2,032	-1,974	-1,973	114.0	**0.0**	**1.24**	110.0	**0.0**	**5.62**
LFB_01	-1,830	-1,807	-1,781	92.4	49.0	**0.0**	83.7	44.7	**0.0**
LFB_02	-1,765	-1,761	-1,731	64.0	58.3	**0.0**	55.4	54.1	**0.0**
LSL_01	-1,627	-1,576	-1,573	103.0	**3.15**	**0.0**	96.0	**0.0**	**1.08**
LSL_02	-2,096	-2,088	-2,084	19.5	**5.68**	**0.0**	10.7	**1.24**	**0.0**
MIN_01	-2,305	-2,254	-2,251	105.0	**3.63**	**0.0**	96.6	**0.0**	**0.906**
MNU_05	-4,264	-4,178	-4,173	179.0	**8.78**	**0.0**	169.0	**3.66**	**0.0**
MNU_06	-4,320	-4,272	-4,272	93.6	**0.0**	**1.74**	88.5	**0.0**	**6.84**
MTH_01	-1,687	-1,638	-1,637	96.1	**0.0**	**0.234**	91.9	**0.0**	**4.45**
PNY_01	-1,714	-1,706	-1,696	31.8	17.8	**0.0**	23.2	13.5	**0.0**

	Log Likelihood			AIC			BIC		
Plot	MST	1 Param	2 Param	MST	1 Param	2 Param	MST	1 Param	2 Param
PNY_02	-2,136	-2,071	-2,064	139.0	10.4	**0.0**	130.0	**5.98**	**0.0**
PNY_03	-2,339	-2,271	-2,271	133.0	**0.0**	**1.81**	128.0	**0.0**	**6.41**
PNY_04	-1,774	-1,739	-1,739	67.5	**0.0**	**1.92**	63.3	**0.0**	**6.18**
PNY_05	-2,082	-2,035	-2,033	95.1	**2.3**	**0.0**	88.4	**0.0**	**2.13**
PNY_06	-1,624	-1,608	-1,608	29.6	**0.0**	**1.81**	25.5	**0.0**	**5.95**
PNY_07	-1,711	-1,697	-1,695	28.7	**1.3**	**0.0**	23.2	**0.0**	**2.93**
POR_01	-1,929	-1,912	-1,910	33.7	**1.53**	**0.0**	27.9	**0.0**	**2.78**
POR_02	-1,764	-1,730	-1,728	66.9	**0.519**	**0.0**	62.1	**0.0**	**3.74**
PTN_01	-1,741	-1,710	-1,708	62.0	**1.83**	**0.0**	55.8	**0.0**	**2.48**
RAS_01	-2,277	-2,221	-2,219	112.0	**1.11**	**0.0**	106.0	**0.0**	**3.37**
RCS_01	-2,128	-2,118	-2,114	23.4	**5.65**	**0.0**	14.5	**1.2**	**0.0**
RCS_02	-2,403	-2,403	-2,398	**6.32**	**7.88**	**0.0**	**0.0**	**6.19**	**2.94**
RCS_03	-2,565	-2,506	-2,495	137.0	20.7	**0.0**	128.0	16.1	**0.0**
RET_05	-2,012	-1,953	-1,953	115.0	**0.0**	**1.81**	111.0	**0.0**	**6.2**
RET_06	-1,776	-1,735	-1,732	85.4	**4.91**	**0.0**	76.9	**0.653**	**0.0**
RET_08	-1,717	-1,676	-1,673	84.3	**4.59**	**0.0**	75.9	**0.365**	**0.0**
RET_09	-1,652	-1,623	-1,622	56.2	**0.0**	**0.711**	52.1	**0.0**	**4.87**
RFH_01	-1,325	-1,310	-1,309	29.6	**1.51**	**0.0**	24.2	**0.0**	**2.43**
RIO_01	-493	-497	-495	**0.0**	**9.85**	**8.01**	**0.0**	12.8	13.9
RIO_02	-467	-470	-469	**0.0**	**7.84**	**7.99**	**0.0**	10.7	13.7
RST_01	-1,928	-1,892	-1,884	84.6	13.9	**0.0**	76.0	**9.6**	**0.0**
SCT_01	-1,899	-1,885	-1,885	26.1	**0.0**	**1.97**	21.8	**0.0**	**6.33**
SCT_06	-1,965	-1,938	-1,938	52.1	**0.0**	**1.91**	47.7	**0.0**	**6.31**
SEU_01	-801	-790	-790	19.3	**0.0**	**1.77**	15.8	**0.0**	**5.27**
SEU_02	-882	-865	-865	31.7	**0.0**	**1.88**	28.1	**0.0**	**5.54**
SEU_03	-551	-550	-549	**0.124**	**0.0**	**0.48**	**0.0**	**2.93**	**6.47**
SEU_04	-625	-621	-620	**6.33**	**0.497**	**0.0**	**2.63**	**0.0**	**2.71**
SEU_05	-701	-683	-682	33.5	**0.0**	**0.987**	30.1	**0.0**	**4.36**
SEU_06	-568	-558	-557	17.9	**0.0**	**1.03**	14.8	**0.0**	**4.15**
SUC_01	-2,068	-2,037	-2,036	59.9	**0.0793**	**0.0**	55.4	**0.0**	**4.33**
SUC_02	-2,015	-2,000	-2,000	27.8	**0.0**	**1.53**	23.4	**0.0**	**5.92**
SUC_03	-1,944	-1,927	-1,927	32.1	**0.0**	**1.97**	27.8	**0.0**	**6.31**
SUC_04	-2,078	-2,054	-2,054	45.4	**0.0**	**1.09**	40.9	**0.0**	**5.5**
SUC_05	-1,969	-1,957	-1,957	21.3	**0.0**	**1.99**	17.0	**0.0**	**6.33**
TAM_01	-2,152	-2,105	-2,102	94.7	**3.81**	**0.0**	86.5	**0.0**	**0.62**
TAM_02	-2,319	-2,251	-2,250	134.0	**0.223**	**0.0**	129.0	**0.0**	**4.3**
TAM_03	-1,405	-1,399	-1,356	94.2	85.4	**0.0**	86.3	81.5	**0.0**
TAM_04	-1,017	-989	-989	54.7	**0.0**	**1.98**	51.0	**0.0**	**5.69**
TAM_05	-1,830	-1,800	-1,799	57.0	**0.0**	**0.149**	52.7	**0.0**	**4.43**
TAM_06	-2,331	-2,268	-2,267	124.0	**0.0**	**0.746**	119.0	**0.0**	**5.24**
TAM_07	-1,728	-1,687	-1,686	81.1	**0.0**	**1.66**	76.9	**0.0**	**5.9**
TAM_08	-1,718	-1,677	-1,677	81.0	**0.0**	**1.55**	76.8	**0.0**	**5.78**
TAM_09	-1,908	-1,870	-1,870	74.1	**0.0**	**1.99**	69.8	**0.0**	**6.31**
TAN_03	-1,878	-1,838	-1,837	78.5	**0.0**	**1.53**	74.1	**0.0**	**5.91**
TAN_04	-1,855	-1,804	-1,804	98.6	**0.0**	**1.39**	94.3	**0.0**	**5.75**
TIP_01	-1,879	-1,835	-1,831	91.3	**4.88**	**0.0**	82.7	**0.565**	**0.0**
TIP_02	-1,836	-1,795	-1,794	80.9	**0.0**	**1.59**	76.6	**0.0**	**5.89**
TIP_03	-1,619	-1,623	-1,618	**0.0**	11.3	**3.5**	**0.0**	15.5	11.8
YAN_01	-2,065	-2,048	-2,047	32.5	**0.329**	**0.0**	27.8	**0.0**	**4.08**
YAN_02	-2,054	-2,036	-2,035	34.1	**0.0**	**0.811**	29.7	**0.0**	**5.19**
ZAR_02	-1,894	-1,899	-1,892	**0.0**	12.4	**0.691**	**0.0**	16.8	**9.49**
ZAR_03	-2,181	-2,110	-2,107	144.0	**3.13**	**0.0**	137.0	**0.0**	**1.36**
ZAR_04	-2,086	-2,043	-2,036	95.1	10.7	**0.0**	86.3	**6.27**	**0.0**

Table S5: Table of results from fitting each forest plot individually for mass. n_P is the value of the distribution at lower truncation point m_P and is calculated from the fitted parameters.

	Country	Allom Region	Num	Plot	m_P	Biomass	1 Param		2 Param			MST
Plot			Trees	Area			μ_1	n_P	μ_1	phi	n_P	n_P
ALF_01	Brazil	Brazilian Shield	467	1.00	41.1	18.7	0.205	5.89	0.254	0.792	6.25	4.85
ALF_02	Brazil	Brazilian Shield	434	1.00	58.2	21.0	0.204	4.20	0.227	0.770	4.31	3.22
ALM_01	Peru	S.Western	1142	2.00	51.9	24.0	0.199	5.88	0.128	0.666	5.25	4.83
ALP_01	Peru	N.Western	545	1.00	46.1	25.5	0.197	6.07	0.230	0.780	6.33	4.96
ALP_02	Peru	N.Western	508	1.00	61.4	21.8	0.209	4.84	0.181	0.723	4.68	3.71
ALP_30	Peru	N.Western	412	1.00	60.1	20.9	0.176	3.36	0.072	0.588	2.67	3.08
ALP_40	Peru	N.Western	986	1.00	54.3	21.8	0.303	14.93	0.323	0.763	15.12	8.84
AMA_02	Colombia	N.Western	310	1.00	102.7	25.6	0.187	1.79	0.313	0.837	2.01	1.27
BAC_01	Venezuela	N.Western	78	0.25	48.4	22.4	0.132	2.24	0.022	0.431	1.27	2.85
BAC_02	Venezuela	N.Western	73	0.25	47.1	22.0	0.123	1.99	0.012	0.347	0.93	2.73
BAC_03	Venezuela	N.Western	59	0.25	52.1	39.0	0.101	1.23	0.043	0.612	0.91	1.88
BAC_04	Venezuela	N.Western	66	0.25	75.2	24.9	0.145	1.50	0.072	0.632	1.25	1.51
BAC_05	Venezuela	N.Western	73	0.25	76.5	14.2	0.212	2.40	0.190	0.730	2.34	1.77
BAC_06	Venezuela	N.Western	58	0.25	39.0	27.4	0.104	1.55	0.027	0.519	0.93	2.57
BEE_01	Bolivia	S.Western	505	1.00	50.8	22.9	0.220	5.83	0.430	0.878	6.91	4.30
BEE_05	Bolivia	S.Western	497	1.00	45.6	20.9	0.195	5.52	0.163	0.716	5.26	4.71
BES_01	Colombia	N.Western	274	1.00	49.0	14.6	0.183	2.71	0.191	0.758	2.74	2.46
BET_01	Colombia	N.Western	655	1.03	54.3	16.6	0.267	8.46	0.220	0.712	8.12	5.59
BET_02	Colombia	N.Western	625	1.03	56.4	15.7	0.281	8.25	0.314	0.772	8.44	4.99
BOG_01	Ecuador	N.Western	475	1.00	52.9	26.6	0.180	4.36	0.195	0.765	4.46	3.90
BOG_02	Ecuador	N.Western	595	1.00	49.6	19.3	0.239	7.62	0.273	0.776	7.86	5.31
CAI_04	Venezuela	N.Western	58	0.25	57.9	27.2	0.120	1.33	0.069	0.657	1.11	1.74
CAX_01	Brazil	Eastern-Central	463	1.00	52.4	37.5	0.143	3.39	0.086	0.661	2.91	3.77
CAX_02	Brazil	Eastern-Central	471	1.00	50.2	33.0	0.156	3.90	0.117	0.698	3.58	3.91
CAX_06	Brazil	Eastern-Central	417	1.00	39.3	35.9	0.130	3.46	0.090	0.684	3.04	4.47
CAX_08	Brazil	Eastern-Central	501	1.00	42.3	24.8	0.212	6.41	0.279	0.803	6.90	4.85
CDM_01	Peru	S.Western	486	1.00	43.1	29.1	0.183	5.28	0.264	0.819	5.87	4.69
CLA_03	Venezuela	N.Western	111	0.26	80.6	24.7	0.185	2.94	0.114	0.666	2.63	2.46
CLA_04	Venezuela	N.Western	130	0.25	91.7	24.4	0.210	3.66	0.063	0.536	2.87	2.80
CRP_02	Bolivia	Brazilian Shield	465	1.00	42.1	19.1	0.188	5.28	0.123	0.669	4.69	4.84
CUZ_01	Peru	S.Western	372	1.00	43.3	22.5	0.188	4.15	0.318	0.849	4.83	3.54
CUZ_02	Peru	S.Western	408	1.00	64.5	23.2	0.217	3.89	0.572	0.927	4.90	2.66
CUZ_03	Peru	S.Western	466	1.00	43.9	22.6	0.199	5.44	0.268	0.807	5.91	4.55
CUZ_04	Peru	S.Western	534	1.00	49.1	24.9	0.205	5.89	0.245	0.784	6.17	4.60
DIV_01	Colombia	N.Western	667	1.10	45.3	16.0	0.256	8.88	0.214	0.714	8.51	5.95
DOI_01	Brazil	S.Western	435	1.00	55.3	23.6	0.192	4.12	0.221	0.776	4.27	3.34
ECE_01	Colombia	N.Western	340	1.00	60.7	13.5	0.215	3.36	0.179	0.716	3.22	2.63
ECE_02	Colombia	N.Western	336	1.00	55.1	28.7	0.177	2.95	0.520	0.942	3.99	2.58
ELD_01	Venezuela	Guyana Shield	99	0.25	75.3	48.3	0.124	1.92	0.071	0.659	1.63	2.35
ELD_02	Venezuela	Guyana Shield	129	0.25	59.5	55.0	0.130	3.13	0.116	0.730	3.02	3.86
ELD_03	Venezuela	Guyana Shield	112	0.25	95.5	18.6	0.241	3.53	0.099	0.590	3.01	2.29
ELD_04	Venezuela	Guyana Shield	150	0.25	39.7	28.9	0.153	5.82	0.030	0.445	3.51	6.78
ESP_01	Peru	S.Western	707	1.00	54.3	19.8	0.242	8.55	0.071	0.508	6.54	5.57
HCC_21	Bolivia	Brazilian Shield	392	1.00	59.0	20.4	0.202	3.72	0.301	0.824	4.11	2.85
HCC_22	Bolivia	Brazilian Shield	509	1.00	41.5	21.3	0.216	6.72	0.330	0.833	7.54	5.15
HCC_24	Bolivia	Brazilian Shield	548	1.00	38.9	21.0	0.202	7.09	0.186	0.734	6.93	6.04
JAS_02	Ecuador	N.Western	591	1.00	54.4	18.1	0.249	7.35	0.312	0.794	7.73	5.07
JAS_03	Ecuador	N.Western	532	1.00	53.4	21.5	0.205	5.52	0.166	0.711	5.24	4.42
JAS_04	Ecuador	N.Western	669	1.00	55.0	27.9	0.214	7.08	0.291	0.808	7.64	5.35
JEN_11	Peru	N.Western	495	1.00	63.6	24.1	0.196	4.31	0.158	0.711	4.09	3.41
JEN_12	Peru	N.Western	664	1.00	53.4	22.5	0.214	7.20	0.076	0.552	5.63	5.54
JFR_01	Brazil	Brazilian Shield	420	0.93	32.5	19.6	0.189	6.28	0.190	0.750	6.28	5.89
JFR_02	Brazil	Brazilian Shield	219	0.53	29.8	21.1	0.199	6.50	0.403	0.892	8.15	5.81
JFR_03	Brazil	Brazilian Shield	397	1.02	51.8	25.6	0.192	3.86	0.389	0.880	4.67	3.12
JFR_04	Brazil	Brazilian Shield	532	1.00	29.0	20.7	0.208	8.86	0.317	0.836	10.09	7.61
JFR_05	Brazil	Brazilian Shield	503	1.00	30.8	20.4	0.204	7.84	0.332	0.848	9.11	6.84
JFR_06	Brazil	Brazilian Shield	478	1.00	30.1	12.9	0.228	8.48	0.195	0.717	8.10	6.72
JFR_07	Brazil	Brazilian Shield	426	1.02	35.8	15.2	0.207	5.87	0.231	0.772	6.06	4.83
JFR_08	Brazil	Brazilian Shield	405	1.00	45.0	16.2	0.212	4.95	0.301	0.818	5.42	3.92
JFR_09	Brazil	Brazilian Shield	554	0.97	34.1	18.4	0.214	8.60	0.176	0.711	8.14	6.98
KAL_01	Colombia	N.Western	314	1.00	54.2	19.7	0.175	2.75	0.143	0.713	2.61	2.41
LAS_02	Peru	S.Western	435	1.00	66.2	23.2	0.215	4.04	0.401	0.864	4.67	2.77
LFB_01	Bolivia	Brazilian Shield	504	1.00	34.0	23.3	0.205	7.34	0.508	0.929	9.65	6.20
LFB_02	Bolivia	Brazilian Shield	475	1.00	34.4	26.8	0.191	6.38	0.529	0.948	8.79	5.81
LSL_01	Bolivia	Brazilian Shield	470	1.00	37.5	14.3	0.231	7.18	0.291	0.796	7.63	5.24
LSL_02	Bolivia	Brazilian Shield	591	1.00	37.5	18.7	0.199	7.74	0.084	0.580	6.09	7.11
MIN_01	Brazil	S.Western	618	1.00	49.7	21.9	0.219	7.24	0.144	0.669	6.54	5.48
MNU_05	Peru	S.Western	951	2.25	65.1	27.3	0.206	3.80	0.416	0.878	4.50	2.70
MNU_06	Peru	S.Western	1109	2.25	45.8	25.8	0.182	5.11	0.167	0.734	4.99	4.59

Plot	Country	Allom Region	Num Trees	Plot Area	m_P	Biomass	1 Param μ_1	1 Param n_P	2 Param μ_1	2 Param phi	2 Param n_P	MST n_P
MTH_01	Brazil	S.Western	432	1.00	57.4	16.3	0.226	4.68	0.184	0.711	4.47	3.27
PNY_01	Peru	S.Western	480	1.00	51.3	10.6	0.272	6.81	0.071	0.480	5.16	4.78
PNY_02	Peru	S.Western	549	1.00	47.1	27.4	0.216	6.58	0.331	0.833	7.36	4.73
PNY_03	Peru	S.Western	637	1.00	43.9	18.7	0.221	8.24	0.098	0.589	6.73	6.57
PNY_04	Peru	S.Western	465	1.00	48.7	19.3	0.198	4.99	0.133	0.675	4.50	4.07
PNY_05	Peru	S.Western	487	1.00	64.6	25.2	0.204	4.36	0.276	0.805	4.69	3.23
PNY_06	Peru	S.Western	396	1.00	59.3	21.2	0.177	3.28	0.105	0.656	2.87	2.94
PNY_07	Peru	S.Western	439	1.00	49.8	16.2	0.199	4.67	0.085	0.588	3.76	4.01
POR_01	Brazil	S.Western	512	1.00	50.0	31.5	0.175	4.76	0.219	0.791	5.07	4.29
POR_02	Brazil	S.Western	447	1.00	62.0	20.5	0.211	4.28	0.252	0.782	4.46	3.16
PTN_01	Colombia	N.Western	495	1.00	46.5	13.0	0.234	6.52	0.076	0.526	5.00	5.13
RAS_01	Colombia	N.Western	600	1.03	45.1	22.9	0.195	6.50	0.106	0.633	5.53	5.36
RCS_01	Peru	S.Western	598	1.00	43.5	22.1	0.186	6.57	0.062	0.538	4.85	6.37
RCS_02	Peru	S.Western	649	1.00	52.4	21.1	0.218	7.27	0.092	0.583	5.92	5.94
RCS_03	Peru	S.Western	642	1.00	52.0	19.4	0.239	7.94	0.117	0.610	6.76	5.23
RET_05	Bolivia	Brazilian Shield	524	1.00	38.9	21.9	0.198	6.65	0.164	0.713	6.30	5.51
RET_06	Bolivia	Brazilian Shield	471	1.00	39.6	26.8	0.197	5.87	0.278	0.817	6.49	4.84
RET_08	Bolivia	Brazilian Shield	436	1.00	43.0	26.8	0.194	5.02	0.263	0.809	5.48	4.11
RET_09	Bolivia	Brazilian Shield	427	1.00	43.4	25.6	0.184	4.64	0.233	0.795	4.97	4.02
RFH_01	Brazil	S.Western	336	1.00	52.9	22.1	0.175	3.00	0.218	0.790	3.19	2.66
RIO_01	Venezuela	Guyana Shield	128	0.25	61.7	40.1	0.140	3.25	0.051	0.575	2.42	3.84
RIO_02	Venezuela	Guyana Shield	116	0.25	66.1	40.7	0.134	2.68	0.039	0.539	1.87	3.17
RST_01	Brazil	S.Western	493	1.00	50.1	22.4	0.188	4.92	0.112	0.653	4.29	4.29
SCT_01	Bolivia	S.Western	488	1.00	52.3	18.8	0.211	5.30	0.196	0.736	5.20	4.24
SCT_06	Bolivia	S.Western	531	1.00	45.8	18.4	0.217	6.54	0.205	0.739	6.44	5.07
SEU_01	Venezuela	N.Western	179	0.25	60.1	31.0	0.200	6.58	0.148	0.695	6.12	5.51
SEU_02	Venezuela	N.Western	230	0.25	53.7	26.6	0.238	10.95	0.114	0.606	9.27	8.35
SEU_03	Venezuela	N.Western	142	0.25	55.2	36.2	0.169	4.71	0.142	0.718	4.49	4.49
SEU_04	Venezuela	N.Western	160	0.25	62.4	35.6	0.192	5.50	0.288	0.823	6.08	4.50
SEU_05	Venezuela	N.Western	206	0.25	50.6	28.4	0.226	9.80	0.165	0.689	9.09	7.26
SEU_06	Venezuela	N.Western	135	0.25	71.2	27.2	0.215	4.74	0.313	0.818	5.16	3.35
SUC_01	Peru	N.Western	516	1.00	55.9	25.1	0.196	4.95	0.217	0.769	5.08	4.02
SUC_02	Peru	N.Western	492	1.00	62.3	25.3	0.190	4.21	0.155	0.713	4.01	3.58
SUC_03	Peru	N.Western	497	1.00	59.8	28.2	0.173	4.00	0.122	0.688	3.65	3.78
SUC_04	Peru	N.Western	519	1.00	56.8	27.6	0.185	4.64	0.175	0.741	4.57	3.97
SUC_05	Peru	N.Western	460	1.00	64.3	27.0	0.176	3.57	0.132	0.698	3.32	3.15
TAM_01	Peru	S.Western	562	1.00	43.8	22.4	0.206	6.78	0.169	0.712	6.44	5.46
TAM_02	Peru	S.Western	610	1.00	47.4	24.1	0.221	7.48	0.219	0.748	7.46	5.36
TAM_03	Peru	S.Western	344	0.58	55.0	31.8	0.148	4.34	0.008	0.222	1.89	5.12
TAM_04	Peru	S.Western	239	0.42	60.7	27.7	0.203	5.31	0.143	0.685	4.88	3.95
TAM_05	Peru	S.Western	492	1.00	45.6	24.6	0.185	5.20	0.156	0.718	4.96	4.54
TAM_06	Peru	S.Western	576	1.00	45.9	27.7	0.198	6.47	0.189	0.741	6.39	5.15
TAM_07	Peru	S.Western	419	1.00	60.4	21.3	0.201	3.89	0.174	0.723	3.75	2.95
TAM_08	Peru	S.Western	457	1.00	52.8	20.6	0.217	5.07	0.275	0.795	5.37	3.64
TAM_09	Peru	S.Western	485	1.00	54.3	21.9	0.205	4.97	0.228	0.770	5.11	3.90
TAN_03	Brazil	Brazilian Shield	530	1.00	41.7	16.2	0.220	7.09	0.159	0.686	6.52	5.71
TAN_04	Brazil	Brazilian Shield	508	1.00	44.2	14.3	0.234	6.94	0.155	0.668	6.28	5.14
TIP_01	Ecuador	N.Western	487	1.00	53.4	23.3	0.197	4.86	0.200	0.753	4.88	3.84
TIP_02	Ecuador	N.Western	441	0.80	64.8	24.1	0.219	5.30	0.231	0.759	5.36	3.71
TIP_03	Ecuador	N.Western	436	1.00	45.3	24.8	0.174	4.34	0.237	0.808	4.76	4.24
YAN_01	Peru	N.Western	488	1.00	56.7	25.3	0.187	4.41	0.172	0.735	4.32	3.76
YAN_02	Peru	N.Western	505	1.00	57.8	28.5	0.180	4.34	0.157	0.726	4.19	3.76
ZAR_02	Colombia	N.Western	522	1.00	55.1	16.0	0.229	5.91	0.088	0.564	4.76	4.73
ZAR_03	Colombia	N.Western	603	1.00	50.2	20.0	0.213	6.82	0.080	0.560	5.37	5.24
ZAR_04	Colombia	N.Western	546	1.00	57.7	25.7	0.183	4.77	0.072	0.579	3.76	4.10

Table S6: Table of AIC and BIC Citerion for each of 3 models for fitting to mass data

	Log Likelihood			AIC			BIC		
Plot	MST	1 Param	2 Param	MST	1 Param	2 Param	MST	1 Param	2 Param
ALF_01	-3,027	-2,997	-2,997	58.1	**0.0**	**1.01**	53.8	**0.0**	**5.25**
ALF_02	-2,912	-2,874	-2,874	74.1	**0.0**	**1.81**	69.7	**0.0**	**6.14**
ALM_01	-7,635	-7,559	-7,555	156.0	**6.68**	**0.0**	146.0	**1.49**	**0.0**
ALP_01	-3,617	-3,572	-3,572	88.1	**0.0**	**1.39**	83.7	**0.0**	**5.77**
ALP_02	-3,394	-3,360	-3,360	67.5	**0.0**	**1.66**	63.0	**0.0**	**6.09**
ALP_30	-2,866	-2,857	-2,852	24.6	**8.29**	**0.0**	16.3	**4.12**	**0.0**
ALP_40	-5,962	-5,834	-5,834	254.0	**0.0**	**1.91**	249.0	**0.0**	**6.99**
AMA_02	-2,235	-2,196	-2,195	76.5	**0.498**	**0.0**	71.9	**0.0**	**3.57**
BAC_01	-581	-580	-575	**8.6**	**8.62**	**0.0**	**3.76**	**6.2**	**0.0**
BAC_02	-555	-553	-546	12.6	12.4	**0.0**	**8.02**	10.1	**0.0**
BAC_03	-473	-472	-471	**1.13**	**0.159**	**0.0**	**0.0**	**1.12**	**3.06**
BAC_04	-492	-490	-489	**2.57**	**0.0**	**0.695**	**0.254**	**0.0**	**3.01**
BAC_05	-495	-490	-490	**7.3**	**0.0**	**1.97**	**4.71**	**0.0**	**4.56**
BAC_06	-456	-455	-452	**3.74**	**3.72**	**0.0**	**0.0**	**2.06**	**0.412**
BEE_01	-3,273	-3,230	-3,225	90.1	**8.01**	**0.0**	81.4	**3.65**	**0.0**
BEE_05	-3,298	-3,269	-3,269	55.2	**0.0**	**1.32**	50.9	**0.0**	**5.62**
BES_01	-1,849	-1,843	-1,843	**9.27**	**0.0**	**1.98**	**5.55**	**0.0**	**5.7**
BET_01	-4,071	-4,012	-4,011	117.0	**0.0**	**1.32**	112.0	**0.0**	**6.04**
BET_02	-3,876	-3,787	-3,787	176.0	**0.0**	**1.79**	171.0	**0.0**	**6.43**
BOG_01	-3,243	-3,228	-3,228	28.9	**0.0**	**1.87**	24.6	**0.0**	**6.16**
BOG_02	-3,785	-3,721	-3,720	126.0	**0.0**	**1.61**	122.0	**0.0**	**6.13**
CAI_04	-442	-444	-443	**0.0**	**4.86**	**6.08**	**0.0**	**7.05**	10.5
CAX_01	-3,367	-3,361	-3,358	14.6	**3.46**	**0.0**	**6.86**	**0.0**	**0.799**
CAX_02	-3,345	-3,323	-3,322	42.0	**0.0**	**0.155**	37.8	**0.0**	**4.41**
CAX_06	-3,040	-3,042	-3,040	**0.0**	**5.18**	**4.13**	**0.0**	**9.26**	12.3
CAX_08	-3,252	-3,192	-3,191	120.0	**0.096**	**0.0**	115.0	**0.0**	**4.23**
CDM_01	-3,256	-3,229	-3,228	51.8	**1.54**	**0.0**	46.0	**0.0**	**2.72**
CLA_03	-778	-776	-776	**2.38**	**0.0**	**1.32**	**0.0**	**0.446**	**4.6**
CLA_04	-893	-890	-889	**4.45**	**1.91**	**0.0**	**0.0**	**0.517**	**1.67**
CRP_02	-3,092	-3,075	-3,074	31.8	**1.47**	**0.0**	26.1	**0.0**	**2.75**
CUZ_01	-2,475	-2,449	-2,446	52.7	**3.7**	**0.0**	44.9	**0.0**	**0.376**
CUZ_02	-2,720	-2,669	-2,661	114.0	13.7	**0.0**	105.0	**9.39**	**0.0**
CUZ_03	-3,057	-3,031	-3,030	50.3	**0.155**	**0.0**	45.9	**0.0**	**4.07**
CUZ_04	-3,531	-3,482	-3,482	95.0	**0.0**	**1.2**	90.6	**0.0**	**5.6**
DIV_01	-4,148	-4,064	-4,064	166.0	**0.0**	**1.22**	162.0	**0.0**	**5.84**
DOI_01	-2,949	-2,915	-2,915	66.0	**0.0**	**1.64**	61.8	**0.0**	**5.83**
ECE_01	-2,241	-2,230	-2,230	19.5	**0.0**	**1.64**	15.5	**0.0**	**5.62**
ECE_02	-2,288	-2,283	-2,272	27.9	19.1	**0.0**	20.1	15.2	**0.0**
ELD_01	-760	-765	-764	**0.0**	10.7	11.6	**0.0**	13.5	17.1
ELD_02	-958	-966	-966	**0.0**	16.6	18.6	**0.0**	19.5	24.4
ELD_03	-755	-744	-743	20.1	**0.0**	**0.124**	17.1	**0.0**	**3.12**
ELD_04	-1,053	-1,053	-1,044	12.3	14.4	**0.0**	**6.2**	11.3	**0.0**
ESP_01	-4,590	-4,464	-4,449	278.0	28.6	**0.0**	269.0	23.9	**0.0**
HCC_21	-2,634	-2,602	-2,601	63.2	**0.451**	**0.0**	58.4	**0.0**	**3.87**
HCC_22	-3,266	-3,218	-3,215	98.4	**2.64**	**0.0**	91.4	**0.0**	**1.78**
HCC_24	-3,557	-3,523	-3,523	66.3	**0.0**	**1.82**	61.8	**0.0**	**6.31**
JAS_02	-3,732	-3,685	-3,685	91.5	**0.0**	**1.09**	86.9	**0.0**	**5.71**
JAS_03	-3,529	-3,497	-3,497	61.9	**0.0**	**1.21**	57.5	**0.0**	**5.64**
JAS_04	-4,400	-4,350	-4,348	98.3	**0.283**	**0.0**	93.4	**0.0**	**4.39**
JEN_11	-3,378	-3,341	-3,341	70.6	**0.0**	**1.26**	66.3	**0.0**	**5.65**
JEN_12	-4,386	-4,327	-4,316	136.0	19.9	**0.0**	127.0	15.3	**0.0**
JFR_01	-2,724	-2,707	-2,707	31.5	**0.0**	**2.0**	27.3	**0.0**	**6.16**
JFR_02	-1,380	-1,373	-1,369	18.4	**5.68**	**0.0**	11.5	**2.2**	**0.0**
JFR_03	-2,662	-2,635	-2,630	60.2	**7.8**	**0.0**	51.5	**3.45**	**0.0**
JFR_04	-3,325	-3,292	-3,289	68.0	**3.98**	**0.0**	59.6	**0.0**	**0.364**
JFR_05	-3,171	-3,147	-3,143	51.7	**5.19**	**0.0**	43.0	**0.876**	**0.0**
JFR_06	-2,948	-2,901	-2,901	91.1	**0.0**	**1.36**	86.9	**0.0**	**5.59**
JFR_07	-2,732	-2,696	-2,696	70.2	**0.0**	**1.75**	66.0	**0.0**	**5.92**
JFR_08	-2,616	-2,592	-2,591	47.0	**0.132**	**0.0**	42.6	**0.0**	**4.09**
JFR_09	-3,519	-3,466	-3,465	105.0	**0.0**	**0.936**	101.0	**0.0**	**5.34**
KAL_01	-2,184	-2,158	-2,158	48.5	**0.0**	**1.41**	44.6	**0.0**	**5.31**
LAS_02	-2,922	-2,865	-2,861	117.0	**4.4**	**0.0**	108.0	**0.0125**	**0.0**
LFB_01	-3,184	-3,163	-3,151	62.0	21.9	**0.0**	53.4	17.6	**0.0**
LFB_02	-3,044	-3,042	-3,027	31.4	28.5	**0.0**	22.8	24.2	**0.0**
LSL_01	-2,946	-2,890	-2,889	111.0	**0.0**	**0.929**	107.0	**0.0**	**5.15**
LSL_02	-3,828	-3,816	-3,808	36.9	14.9	**0.0**	28.0	10.4	**0.0**
MIN_01	-4,027	-3,970	-3,968	114.0	**2.11**	**0.0**	107.0	**0.0**	**2.42**
MNU_05	-6,438	-6,323	-6,313	245.0	18.6	**0.0**	235.0	13.5	**0.0**
MNU_06	-7,492	-7,434	-7,434	114.0	**0.0**	**1.61**	109.0	**0.0**	**6.71**
MTH_01	-2,838	-2,784	-2,783	107.0	**0.0**	**1.37**	103.0	**0.0**	**5.59**
PNY_01	-2,938	-2,918	-2,909	55.3	17.1	**0.0**	46.6	12.8	**0.0**

	Log Likelihood			AIC			BIC		
Plot	MST	1 Param	2 Param	MST	1 Param	2 Param	MST	1 Param	2 Param
PNY_02	-3,588	-3,511	-3,509	154.0	**2.92**	**0.0**	147.0	**0.0**	**1.53**
PNY_03	-4,085	-4,045	-4,037	90.9	12.6	**0.0**	81.6	**7.96**	**0.0**
PNY_04	-3,108	-3,067	-3,066	79.7	**0.922**	**0.0**	74.5	**0.0**	**3.34**
PNY_05	-3,298	-3,250	-3,249	94.7	**0.0**	**0.441**	90.3	**0.0**	**4.87**
PNY_06	-2,749	-2,735	-2,733	28.7	**1.69**	**0.0**	22.9	**0.0**	**2.45**
PNY_07	-2,913	-2,898	-2,893	35.6	**8.48**	**0.0**	27.2	**4.25**	**0.0**
POR_01	-3,513	-3,488	-3,487	47.8	**0.0**	**0.793**	43.5	**0.0**	**5.1**
POR_02	-2,987	-2,947	-2,946	78.7	**0.0**	**1.52**	74.5	**0.0**	**5.78**
PTN_01	-3,123	-3,108	-3,099	44.1	16.7	**0.0**	35.4	12.4	**0.0**
RAS_01	-4,013	-3,950	-3,946	130.0	**6.91**	**0.0**	121.0	**2.42**	**0.0**
RCS_01	-3,978	-3,984	-3,971	**9.93**	23.3	**0.0**	**1.03**	18.9	**0.0**
RCS_02	-4,208	-4,198	-4,190	31.3	12.6	**0.0**	22.0	**7.99**	**0.0**
RCS_03	-4,156	-4,045	-4,040	229.0	**8.98**	**0.0**	220.0	**4.37**	**0.0**
RET_05	-3,447	-3,391	-3,390	110.0	**0.0**	**1.06**	106.0	**0.0**	**5.45**
RET_06	-3,090	-3,046	-3,044	88.5	**1.35**	**0.0**	82.9	**0.0**	**2.91**
RET_08	-2,897	-2,853	-2,852	86.0	**0.375**	**0.0**	81.4	**0.0**	**3.85**
RET_09	-2,872	-2,837	-2,837	66.3	**0.0**	**0.676**	62.2	**0.0**	**4.84**
RFH_01	-2,317	-2,298	-2,298	35.9	**0.0**	**1.25**	32.0	**0.0**	**5.19**
RIO_01	-940	-947	-944	**0.0**	15.5	12.9	**0.0**	18.5	18.7
RIO_02	-870	-873	-870	**0.0**	**7.59**	**2.99**	**0.0**	10.5	**8.72**
RST_01	-3,334	-3,307	-3,304	55.9	**3.36**	**0.0**	48.3	**0.0**	**0.926**
SCT_01	-3,194	-3,174	-3,174	38.5	**0.0**	**1.9**	34.2	**0.0**	**6.26**
SCT_06	-3,431	-3,390	-3,390	79.6	**0.0**	**1.93**	75.2	**0.0**	**6.33**
SEU_01	-1,199	-1,196	-1,196	**2.39**	**0.0**	**1.51**	**0.0**	**1.11**	**6.12**
SEU_02	-1,460	-1,455	-1,453	**9.83**	**1.46**	**0.0**	**4.72**	**0.0**	**2.19**
SEU_03	-988	-986	-986	**2.05**	**0.0**	**1.8**	**0.0**	**1.01**	**5.87**
SEU_04	-1,087	-1,081	-1,080	10.4	**0.0**	**1.03**	**7.23**	**0.0**	**4.24**
SEU_05	-1,333	-1,314	-1,314	35.0	**0.0**	**1.23**	31.6	**0.0**	**4.61**
SEU_06	-909	-896	-895	24.3	**0.0**	**1.37**	21.1	**0.0**	**4.49**
SUC_01	-3,473	-3,442	-3,442	60.3	**0.0**	**1.8**	55.8	**0.0**	**6.22**
SUC_02	-3,358	-3,344	-3,344	24.4	**0.0**	**1.28**	20.0	**0.0**	**5.66**
SUC_03	-3,450	-3,453	-3,452	**0.0**	**8.39**	**8.33**	**0.0**	12.7	17.0
SUC_04	-3,550	-3,524	-3,524	49.8	**0.0**	**1.95**	45.3	**0.0**	**6.35**
SUC_05	-3,214	-3,197	-3,197	32.0	**0.0**	**0.645**	27.6	**0.0**	**4.98**
TAM_01	-3,682	-3,632	-3,632	98.2	**0.0**	**0.989**	93.7	**0.0**	**5.42**
TAM_02	-3,969	-3,885	-3,885	168.0	**0.0**	**2.0**	163.0	**0.0**	**6.52**
TAM_03	-2,492	-2,503	-2,460	60.0	83.9	**0.0**	52.2	80.0	**0.0**
TAM_04	-1,624	-1,594	-1,594	57.7	**0.0**	**0.862**	54.0	**0.0**	**4.57**
TAM_05	-3,319	-3,284	-3,283	68.1	**0.0**	**1.32**	63.9	**0.0**	**5.6**
TAM_06	-3,838	-3,774	-3,773	128.0	**0.0**	**1.94**	123.0	**0.0**	**6.43**
TAM_07	-2,842	-2,798	-2,798	87.1	**0.0**	**1.65**	82.9	**0.0**	**5.88**
TAM_08	-3,007	-2,949	-2,949	114.0	**0.0**	**0.918**	110.0	**0.0**	**5.15**
TAM_09	-3,222	-3,188	-3,188	66.7	**0.0**	**1.78**	62.4	**0.0**	**6.1**
TAN_03	-3,376	-3,348	-3,347	53.9	**0.0743**	**0.0**	49.5	**0.0**	**4.3**
TAN_04	-3,213	-3,169	-3,167	88.5	**1.04**	**0.0**	83.1	**0.0**	**3.32**
TIP_01	-3,279	-3,232	-3,232	90.6	**0.0**	**2.0**	86.3	**0.0**	**6.31**
TIP_02	-2,943	-2,891	-2,891	102.0	**0.0**	**1.96**	97.3	**0.0**	**6.26**
TIP_03	-2,944	-2,949	-2,948	**0.0**	12.9	12.9	**0.0**	17.0	21.2
YAN_01	-3,328	-3,305	-3,305	45.1	**0.0**	**1.88**	40.7	**0.0**	**6.28**
YAN_02	-3,488	-3,460	-3,460	54.2	**0.0**	**1.64**	49.8	**0.0**	**6.02**
ZAR_02	-3,344	-3,346	-3,339	**5.24**	11.0	**0.0**	**0.0**	10.1	**3.56**
ZAR_03	-3,975	-3,913	-3,904	138.0	17.2	**0.0**	129.0	12.7	**0.0**
ZAR_04	-3,776	-3,737	-3,729	88.8	13.7	**0.0**	80.0	**9.34**	**0.0**

2 Derivation of relationship between μ_1 and ϕ

If we have a forest size-distribution which has power law growth, with scaling power ϕ_t and a constant mortality rate γ_t what happens if we fit the size-distribution with a fixed growth scaling power ϕ that is not necessarily equal to ϕ_t?

The pdf of the actual true distribution is: -

$$f(D) = \mu_{t1} D^{-\phi_t} \frac{\exp(x_t \mu_{t1} D_L^{1-\phi_t})}{\exp(x_t \mu_{t1} D^{1-\phi_t})} \tag{1}$$

where $x_t = 1/(1-\phi_t)$ and D_L is the left-truncation point of the dataset.

The log-Likelihood L is

$$L = \sum_i \ln(f(D_i)) \tag{2}$$

where D_i is the trunk diameter of the ith tree in the dataset.

Solving for $\dfrac{\partial L}{\partial \mu_{t1}} = 0$ gives the result of fitting the dataset with MLE with fixed ϕ, giving a fitted μ_1

$$\mu_1 = \frac{1-\phi}{\left(\frac{1}{n}\sum_i D_i^{1-\phi} - D_L^{1-\phi}\right)} \tag{3}$$

where n is the number of trees in the dataset.

Can remove the dependence on the data by noting

$$\frac{1}{n}\sum_i D_i^{1-\phi} = \overline{D^{1-\phi}} = \int_{D_L}^{\infty} f(D) D^{1-\phi} dD \tag{4}$$

If we say

$$v(D) = x_t \mu_{t1} D^{1-\phi_t} \tag{5}$$

and

$$y = \frac{1-\phi}{1-\phi_t} \tag{6}$$

then

$$\overline{D^{1-\phi}} = \frac{\exp(v_L)}{(x\mu_{t1})^y} \int_{v_L}^{\infty} v^y \exp(-v) dv = \frac{\exp(v_L)}{(x_t\mu_{t1})^y} \Gamma(y+1, v_L) \tag{7}$$

So the final result is

$$\boxed{\mu_1 = \frac{1-\phi}{\left(\frac{\exp(v_L)}{(x_t\mu_{t1})^y}\Gamma(y+1, v_L) - D_L^{1-\phi}\right)}} \tag{8}$$

If $\phi = \phi_t$ then $y = 1$ so $\exp(v_L)\Gamma(y+1, v_L) = 1 + v_L$ and we correctly get $\mu_1 = \mu_{t1}$.

3 Region and Country DBH Size-Distributions

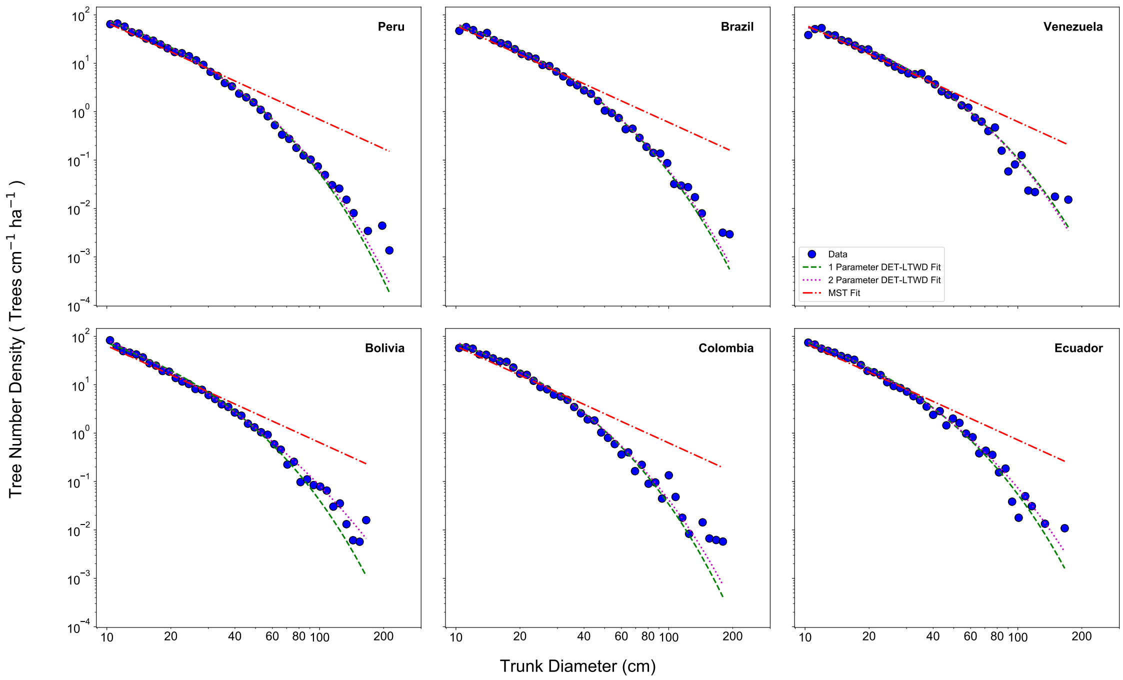

Figure S1: Shows the fit of the three models to the trunk diameter data for each country.

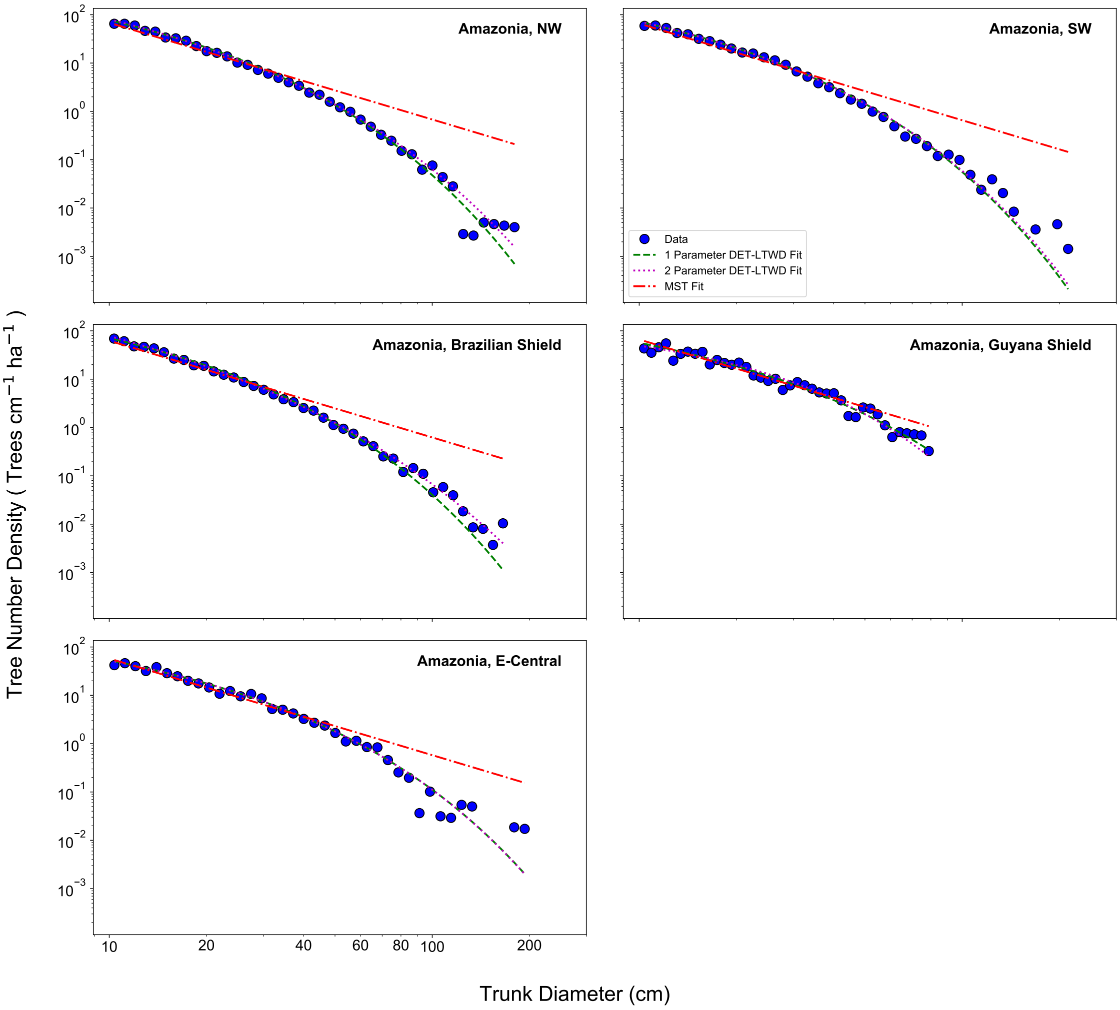

Figure S2: Shows the fit of the three models to the trunk diameter data for each allometric region.

4 Region and Country Mass Size-Distributions

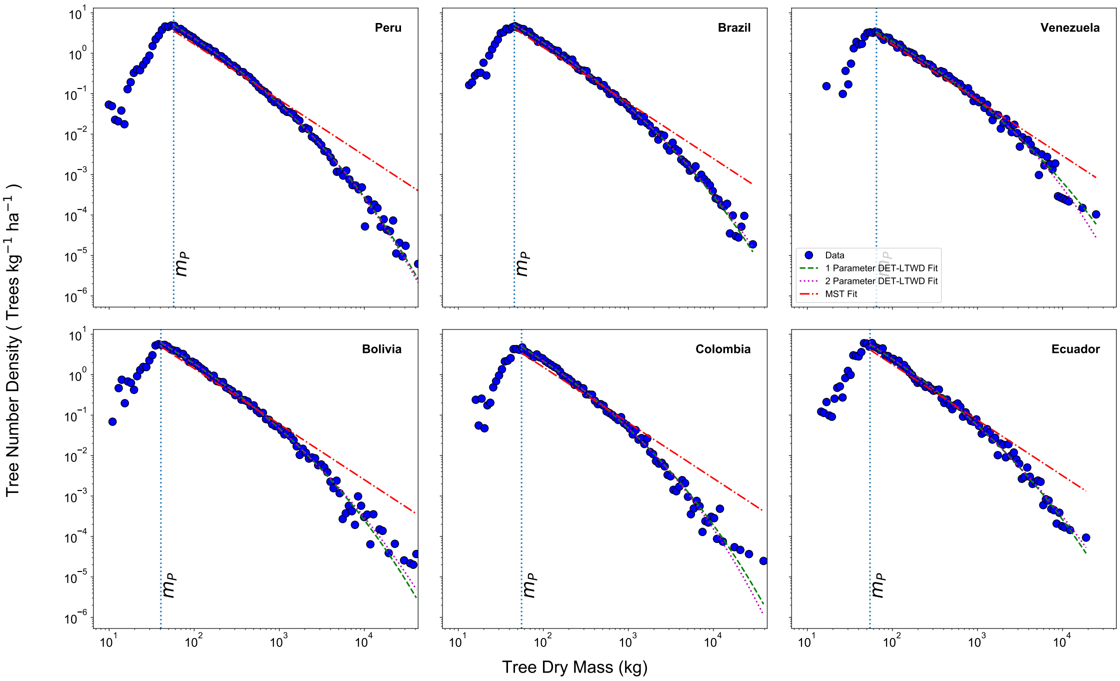

Figure S3: Shows the fit of the three models to the mass data for each country.

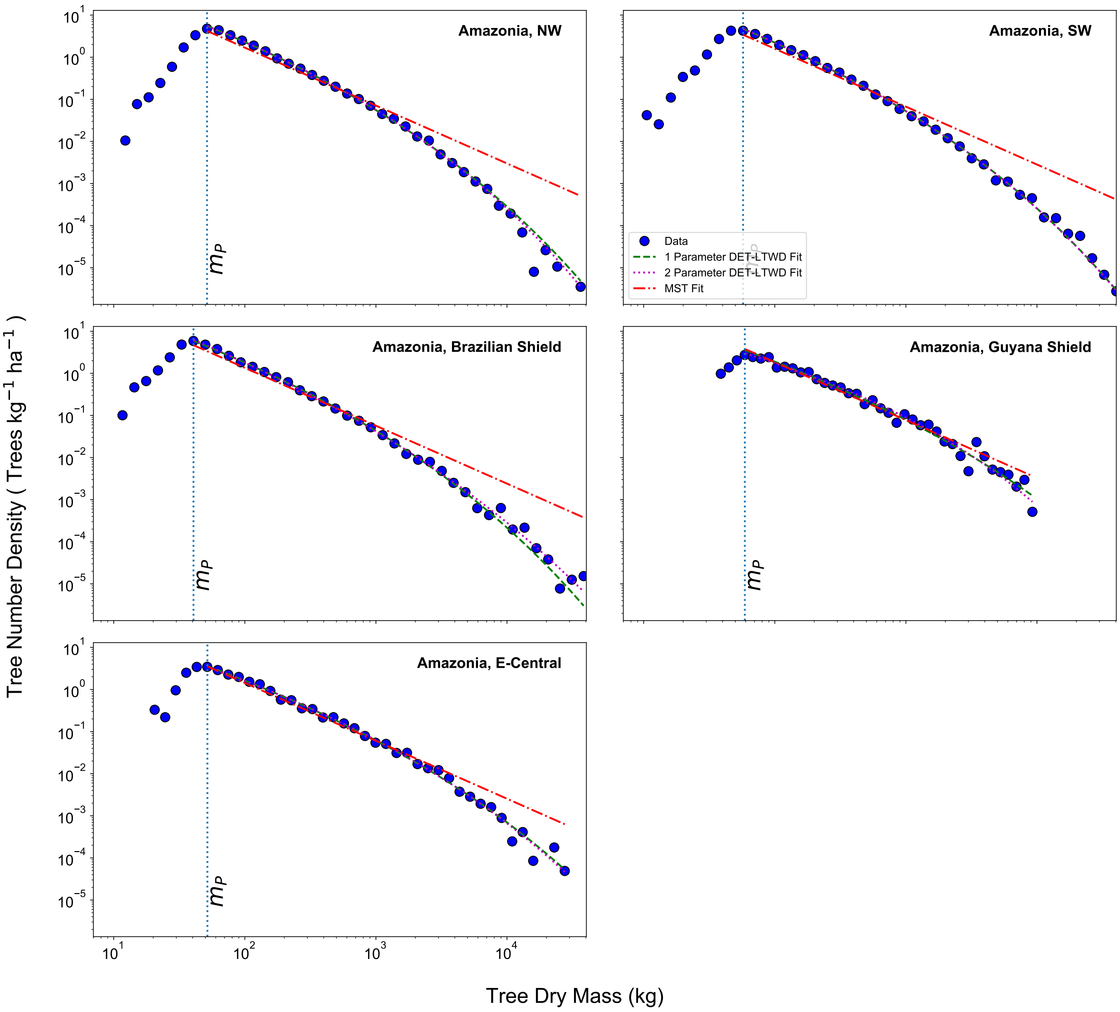

Figure S4: Shows the fit of the three models to the mass data for each allometric region.

5 Forest Plot DBH Size-Distributions

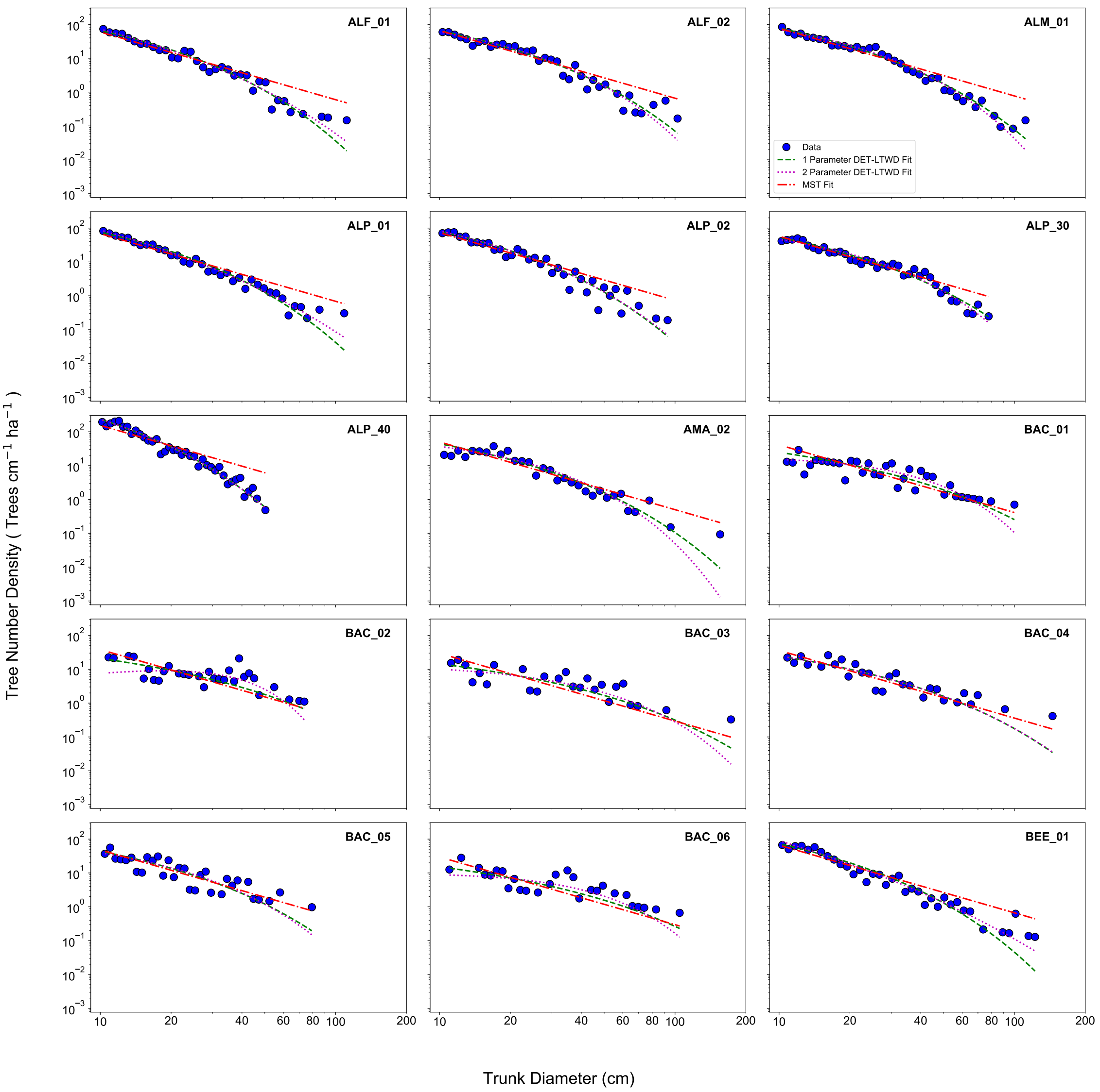

Figure S5: Diameter Size Distributions of Individual Forest Plots.

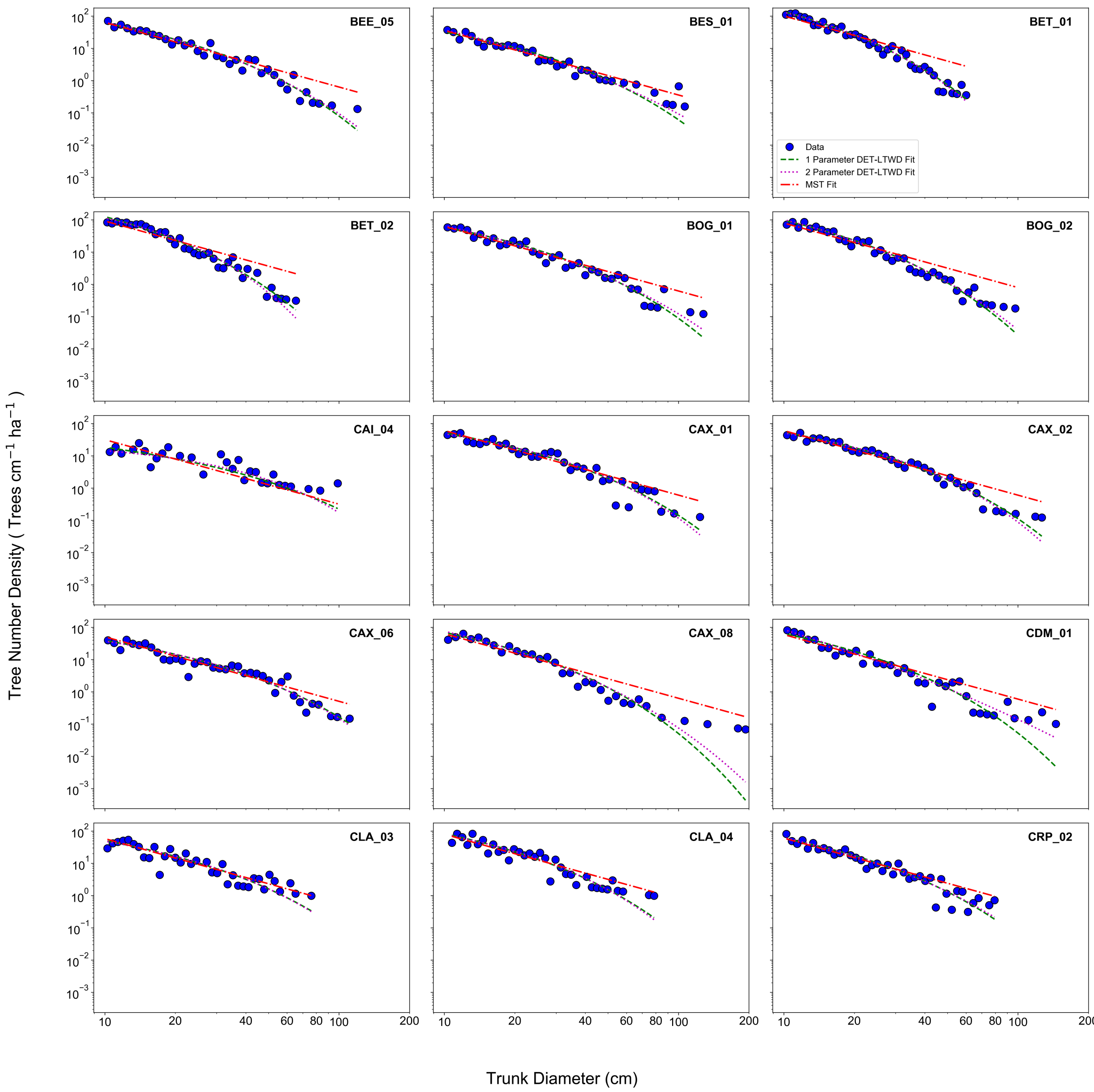

Figure S6: Diameter Size Distributions of Individual Forest Plots.

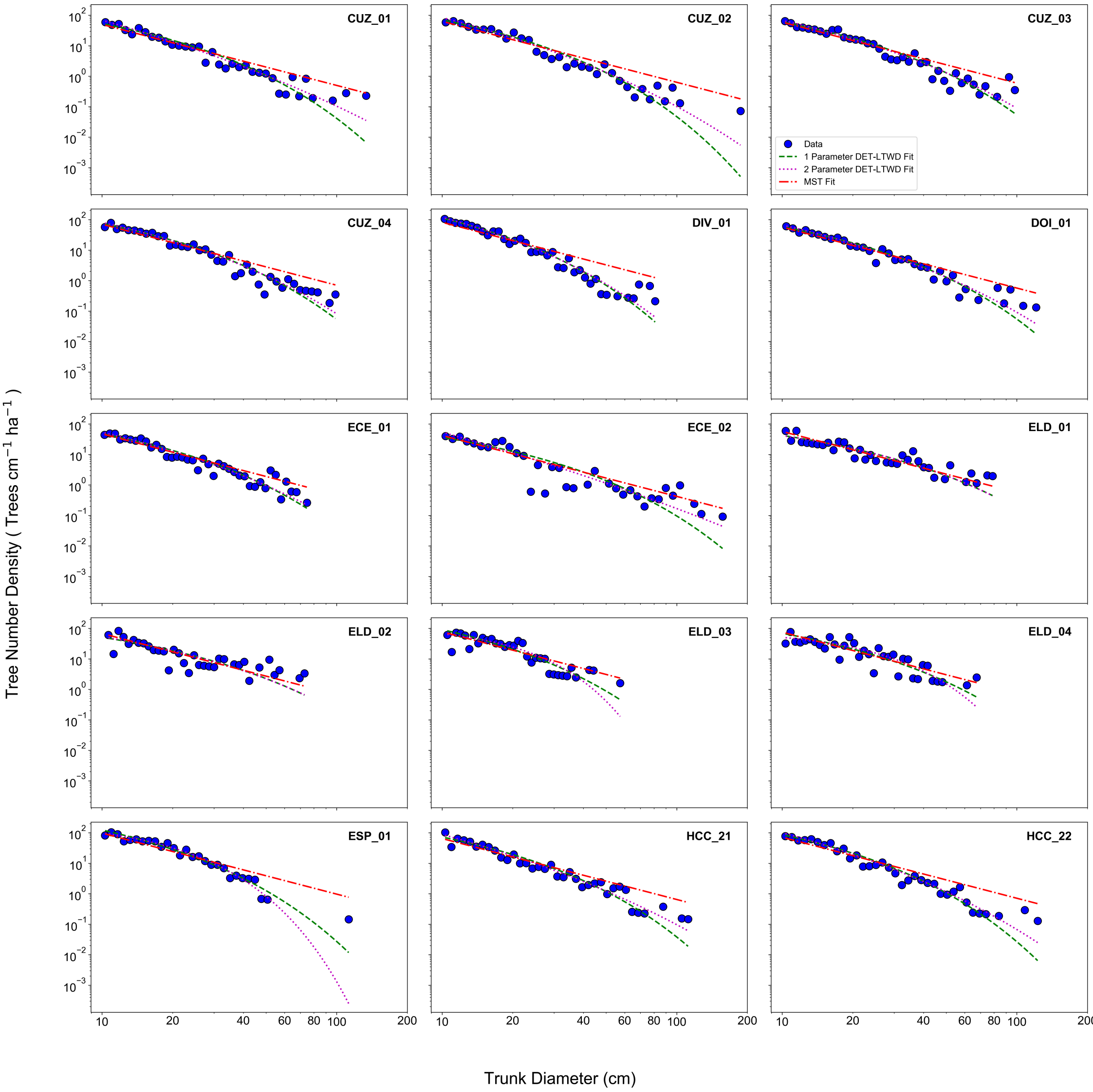

Figure S7: Diameter Size Distributions of Individual Forest Plots.

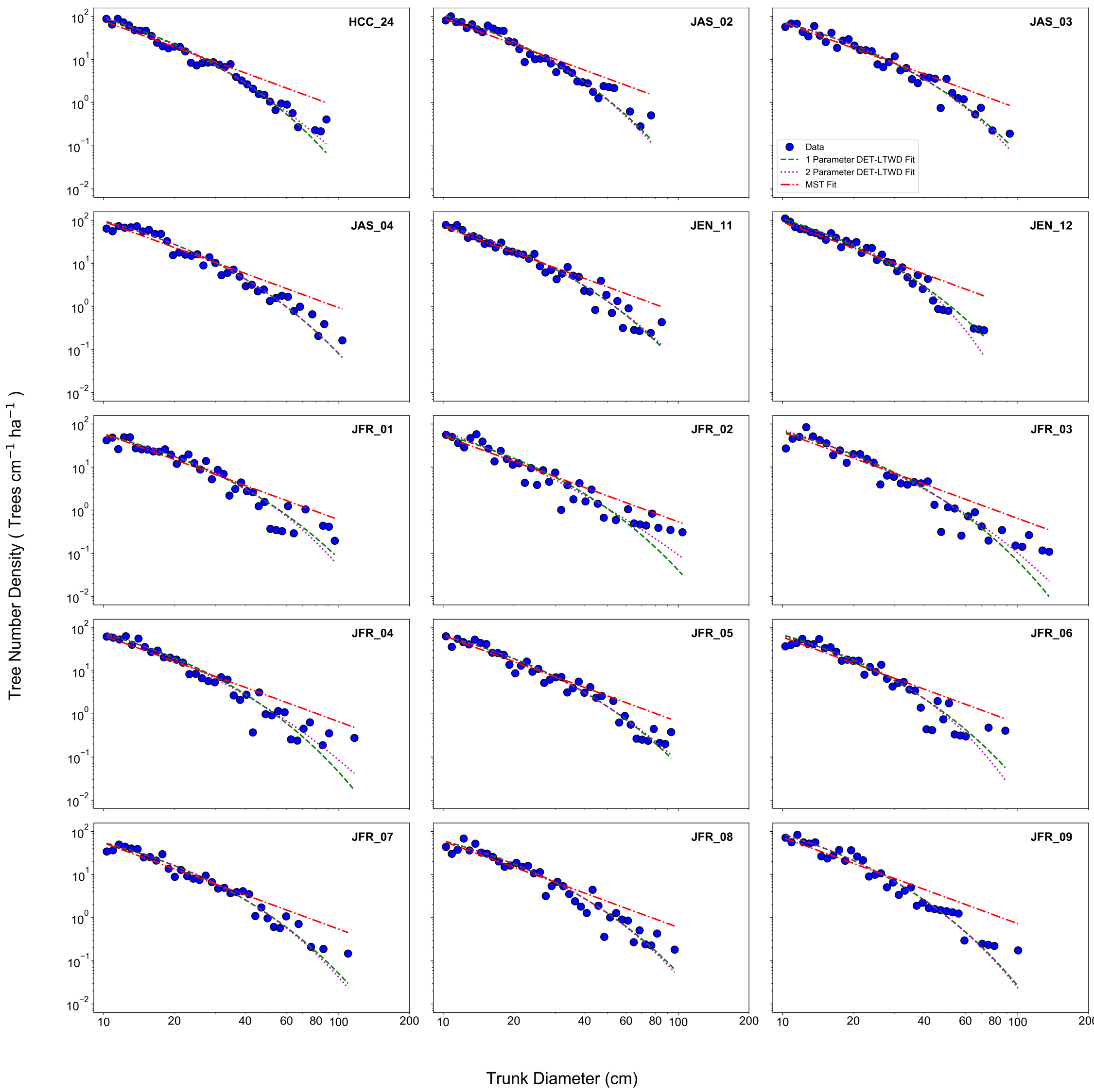

Figure S8: Diameter Size Distributions of Individual Forest Plots.

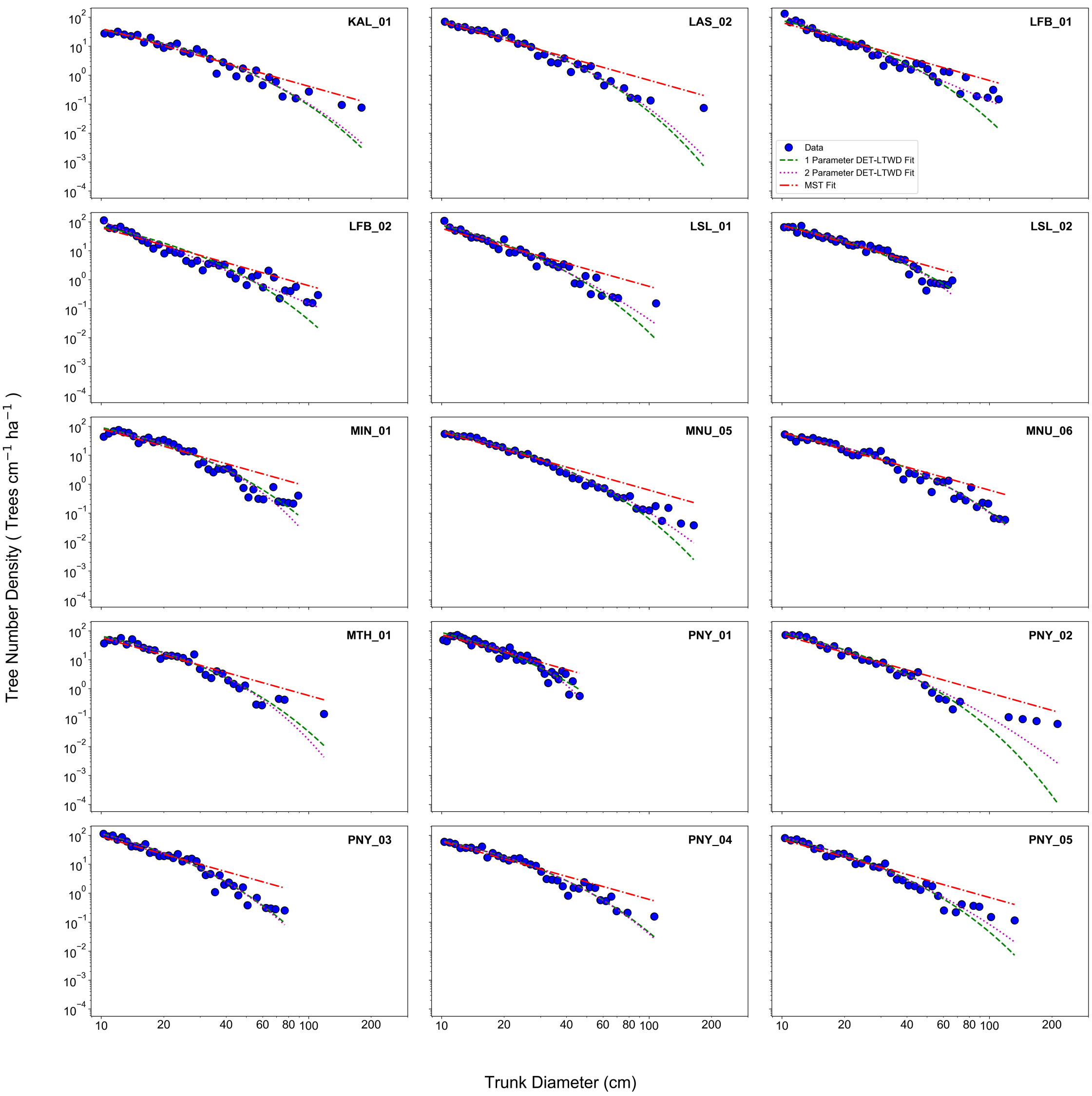

Figure S9: Diameter Size Distributions of Individual Forest Plots.

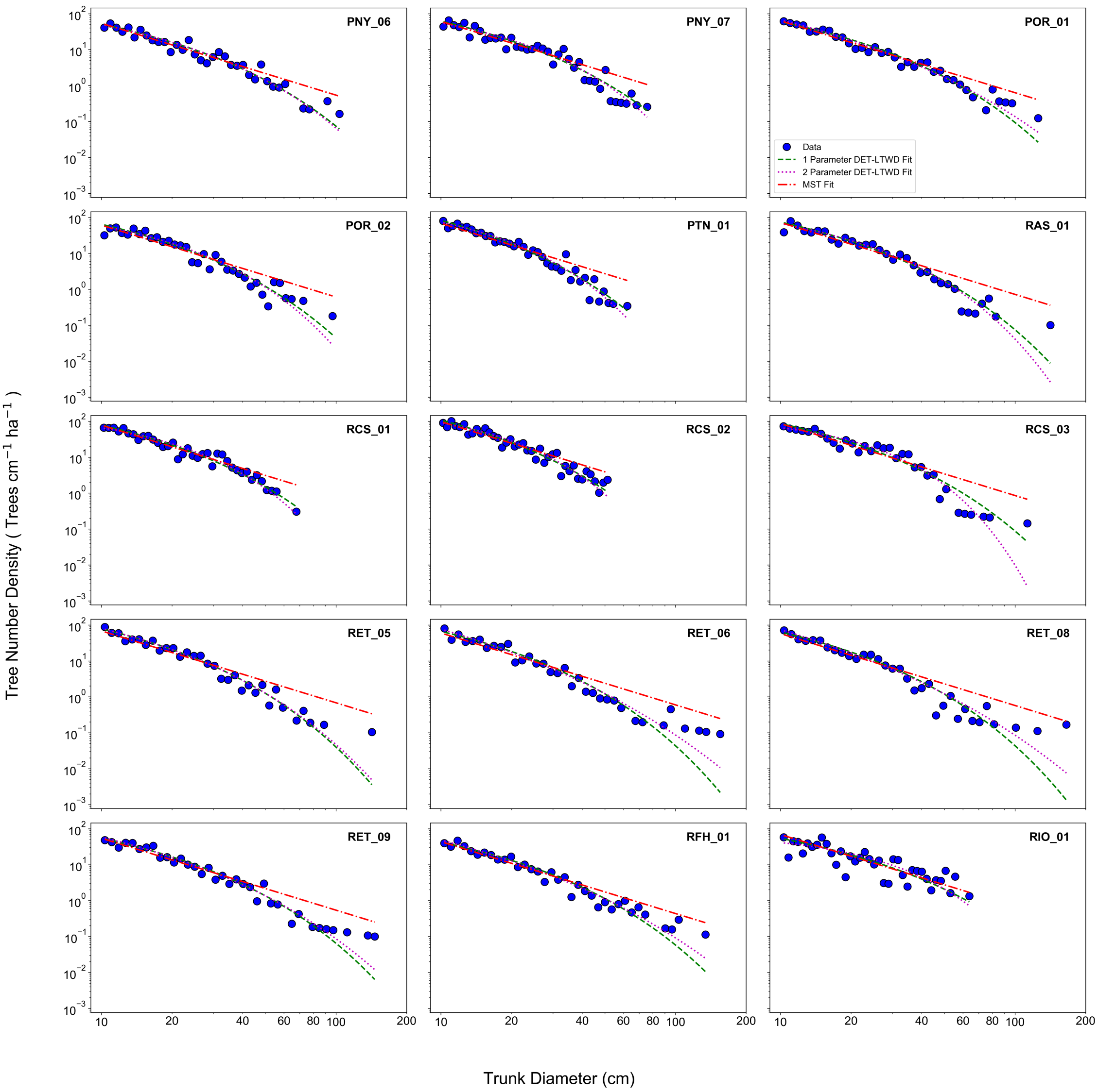

Figure S10: Diameter Size Distributions of Individual Forest Plots.

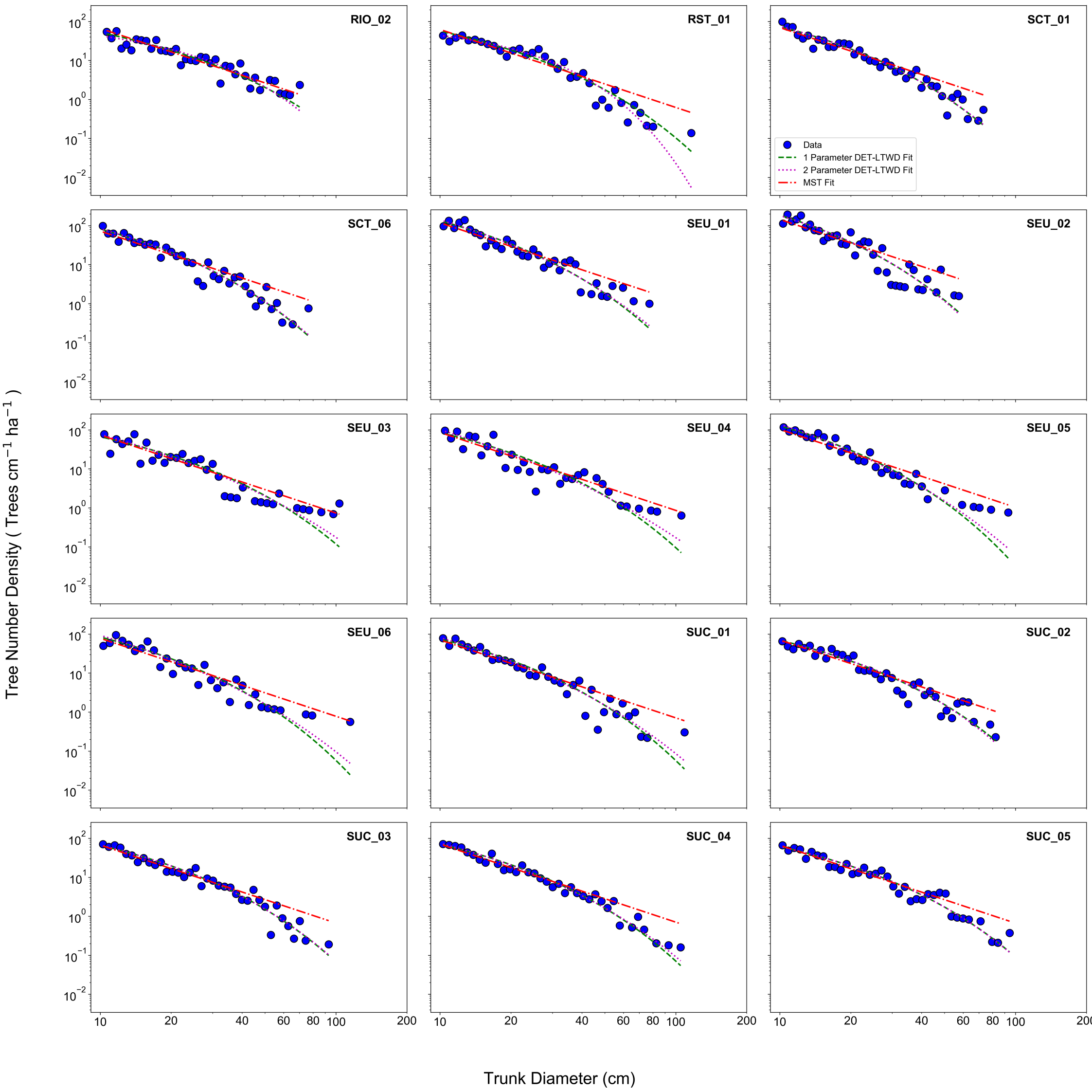

Figure S11: Diameter Size Distributions of Individual Forest Plots.

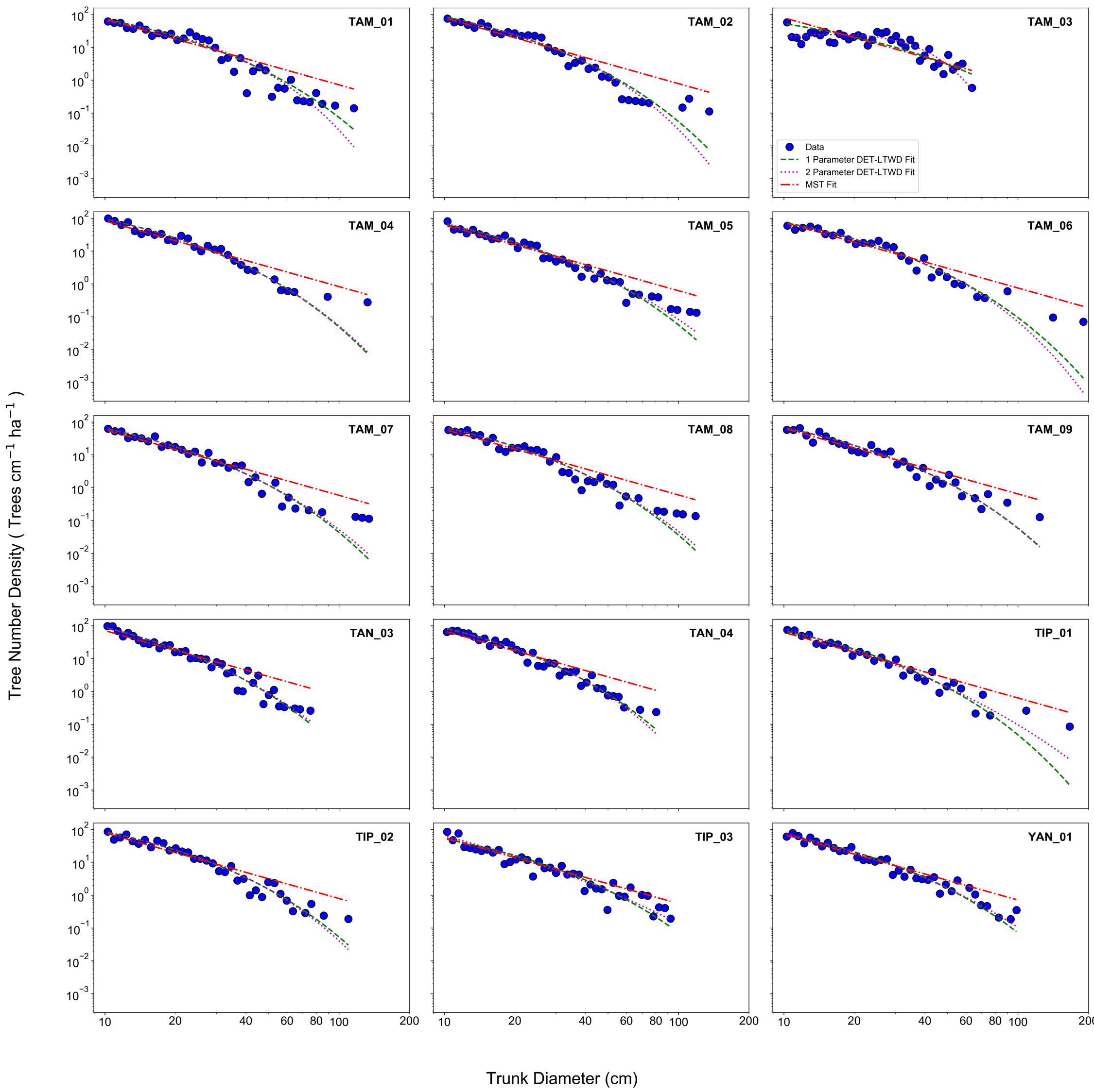

Figure S12: Diameter Size Distributions of Individual Forest Plots.

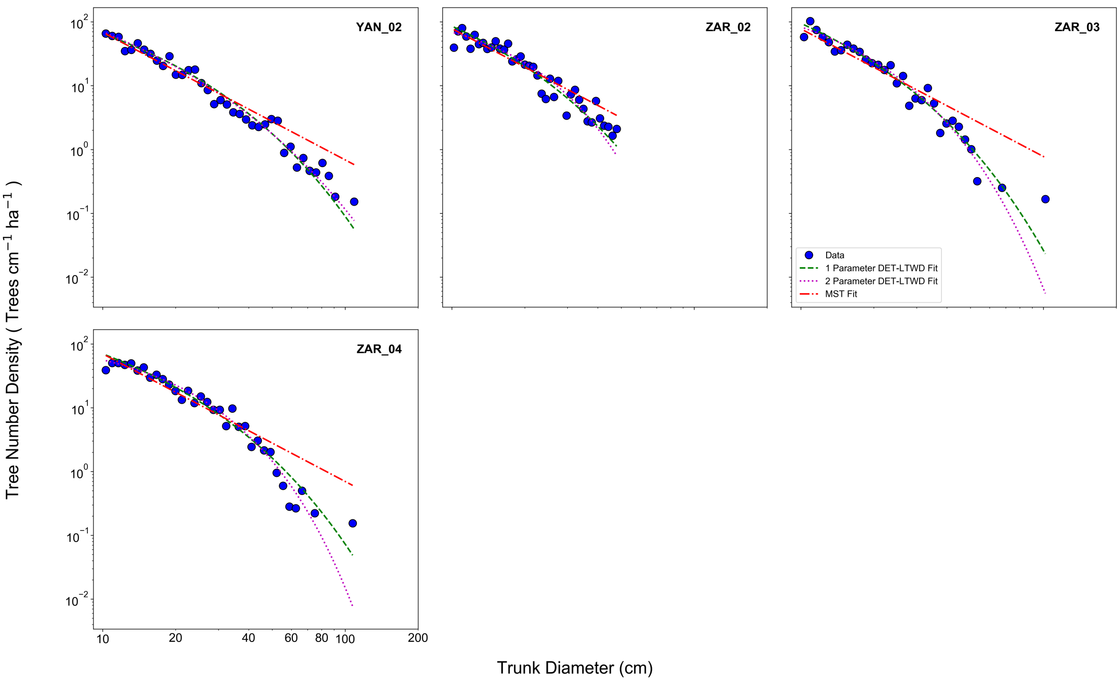

Figure S13: Diameter Size Distributions of Individual Forest Plots.

6 Forest Plot Mass Size-Distributions

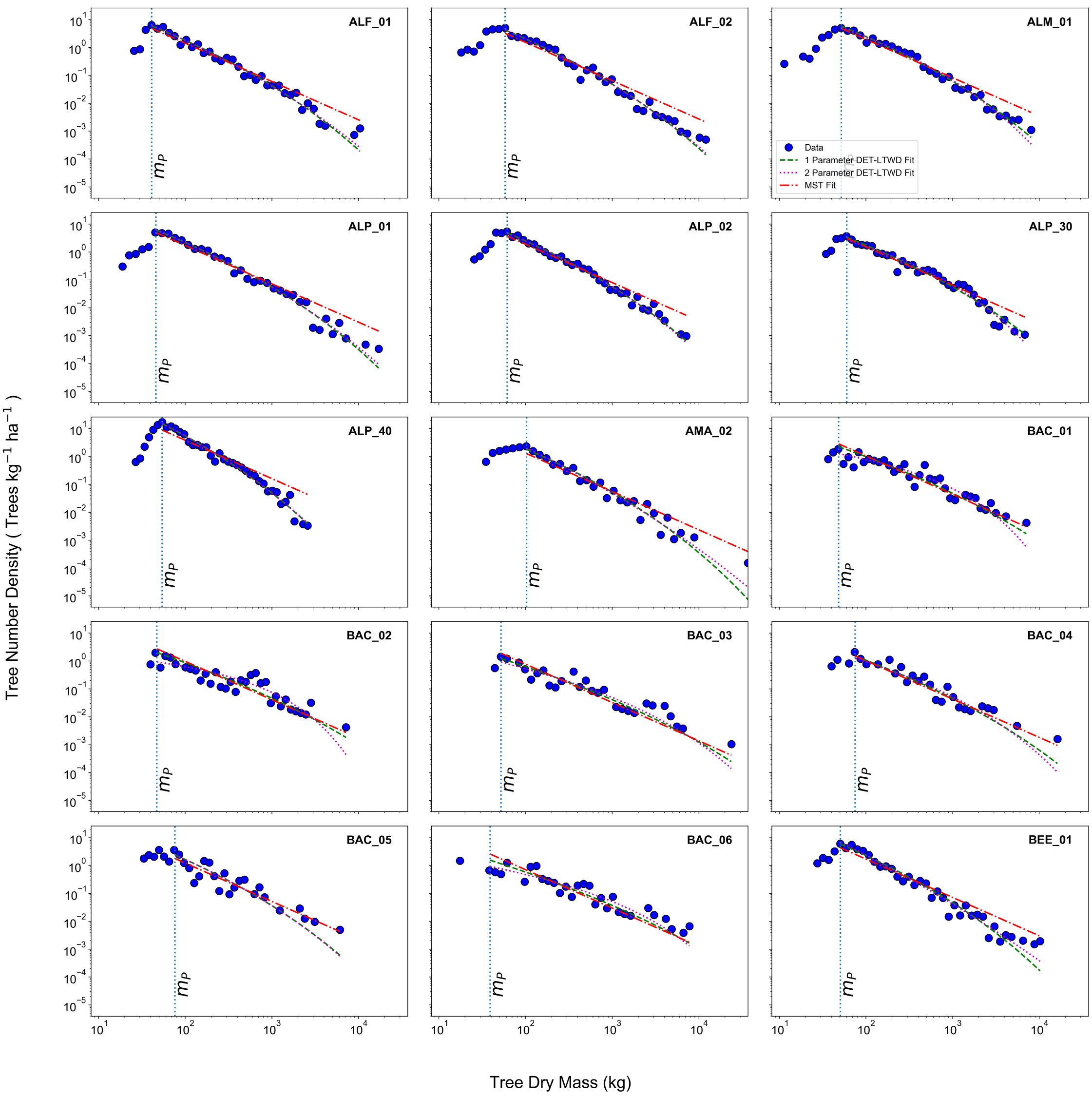

Figure S14: Mass Size Distributions of Individual Forest Plots.

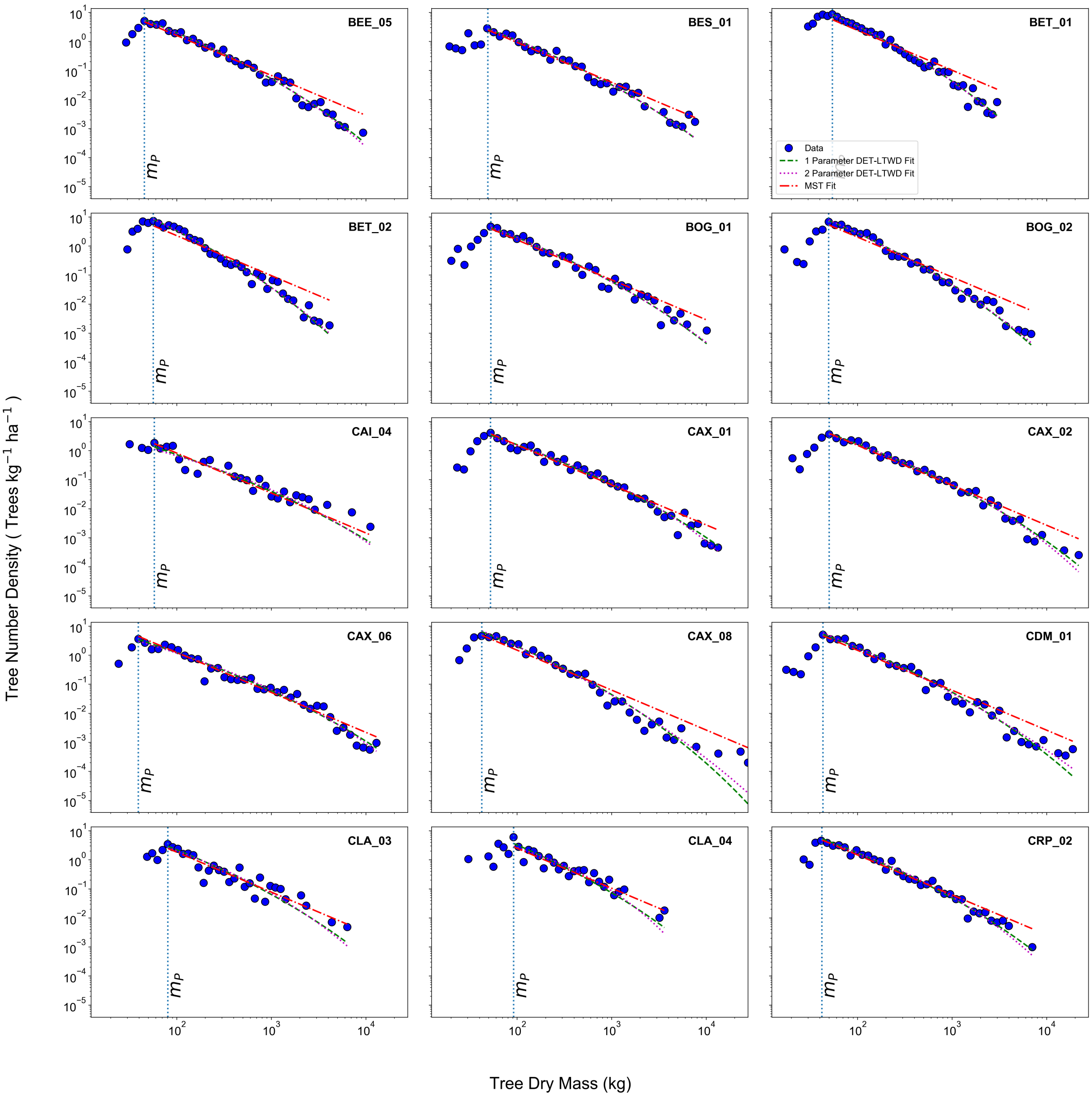

Figure S15: Mass Size Distributions of Individual Forest Plots.

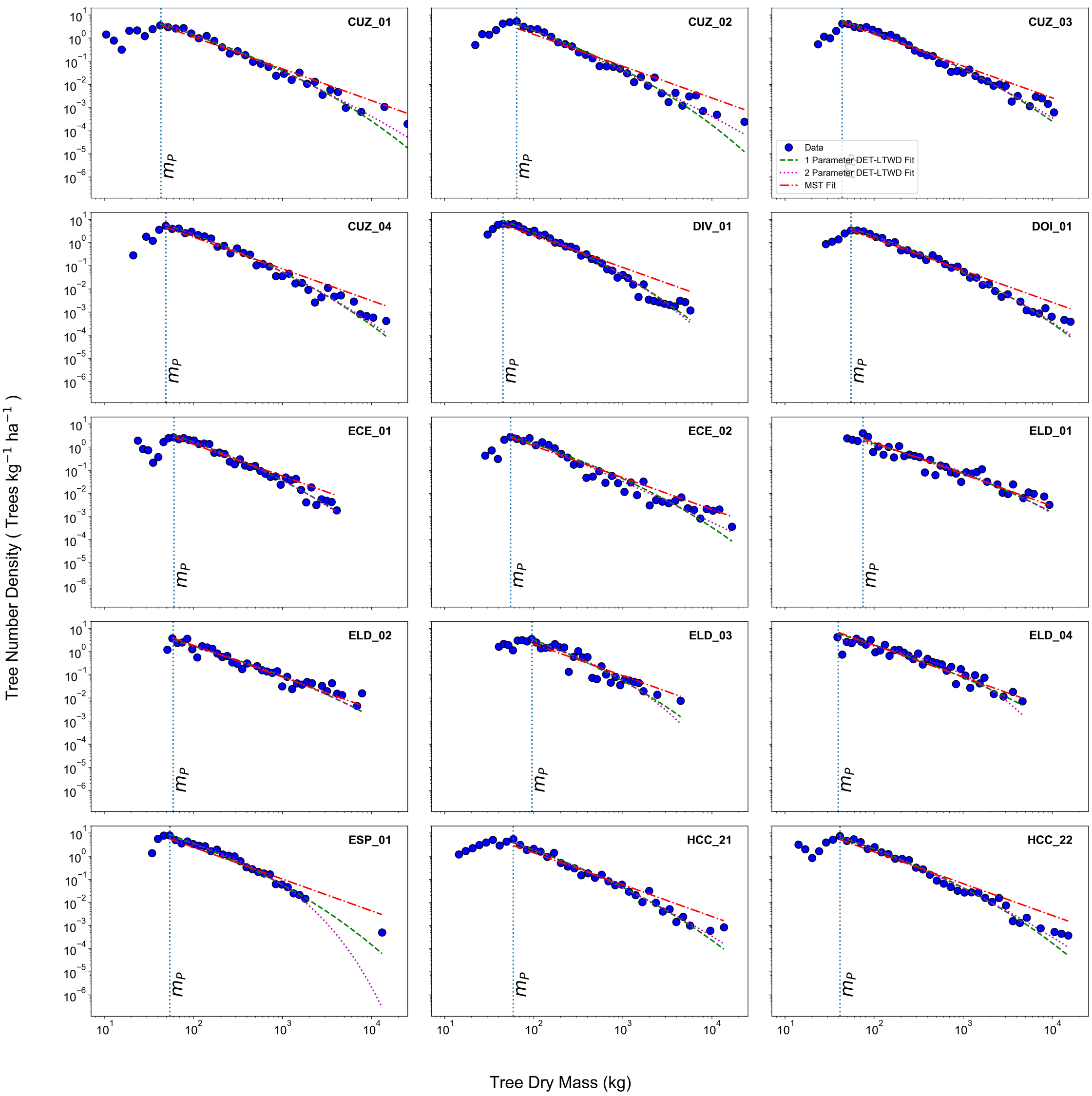

Figure S16: Mass Size Distributions of Individual Forest Plots.

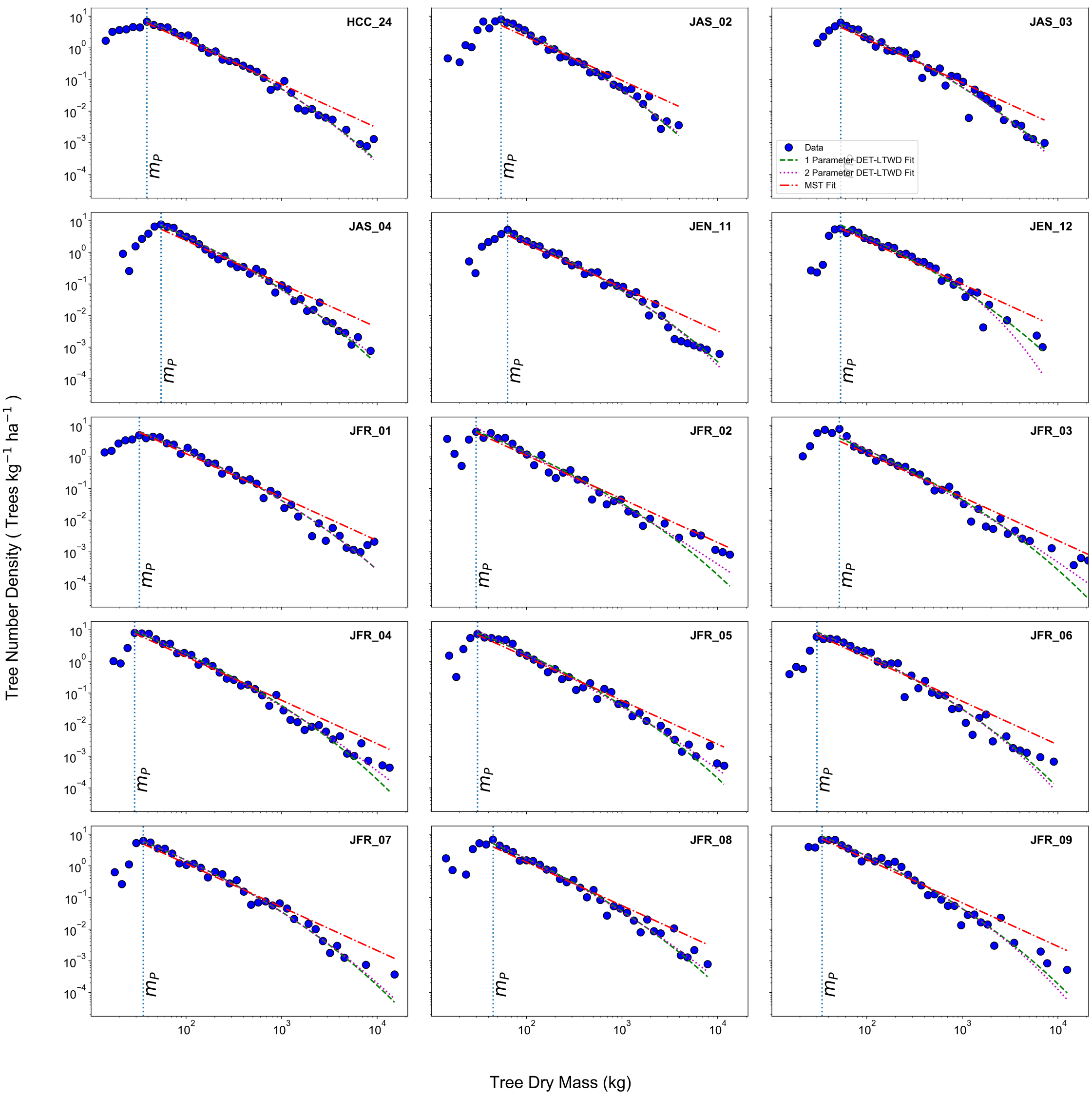

Figure S17: Mass Size Distributions of Individual Forest Plots.

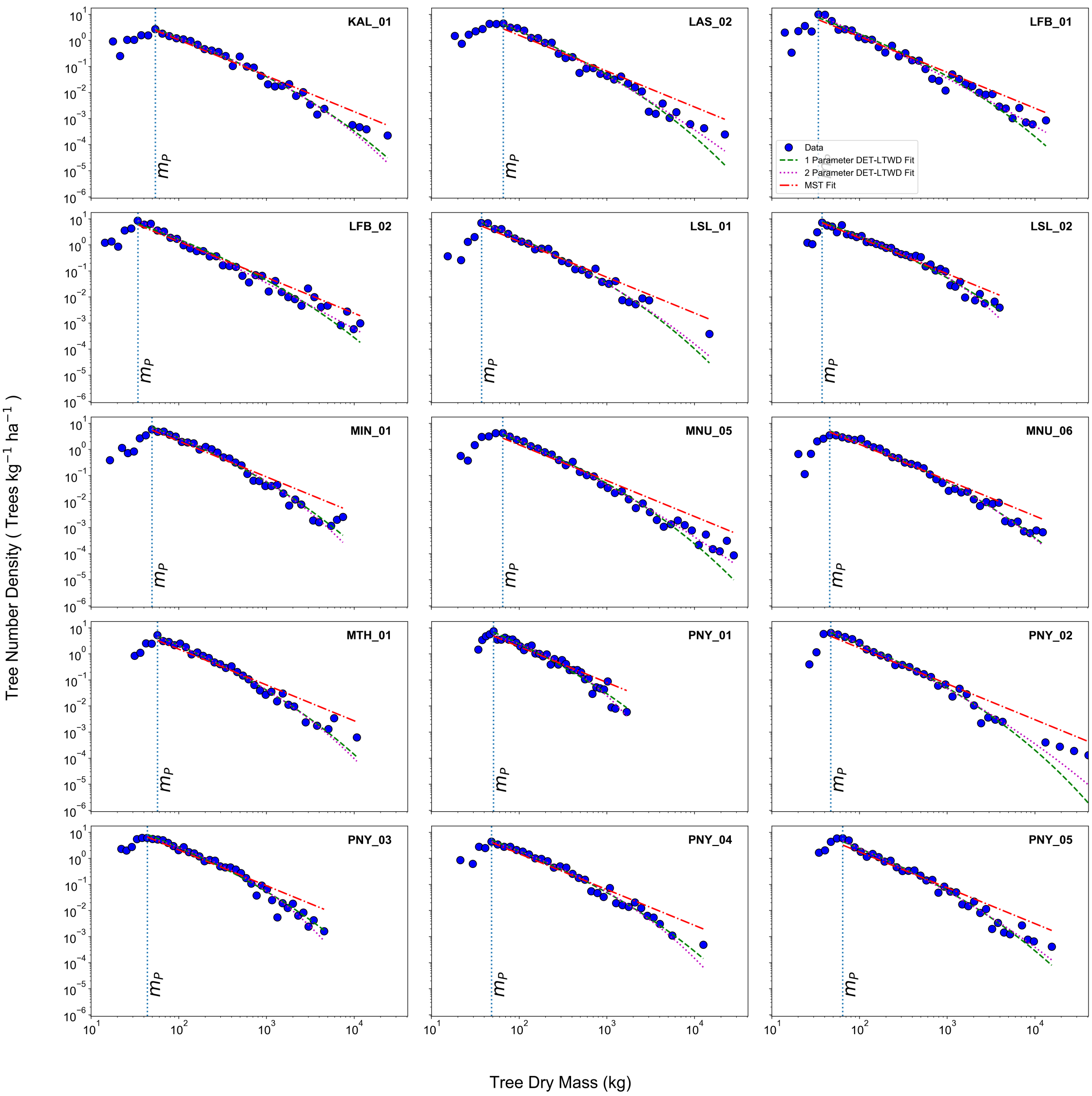

Figure S18: Mass Size Distributions of Individual Forest Plots.

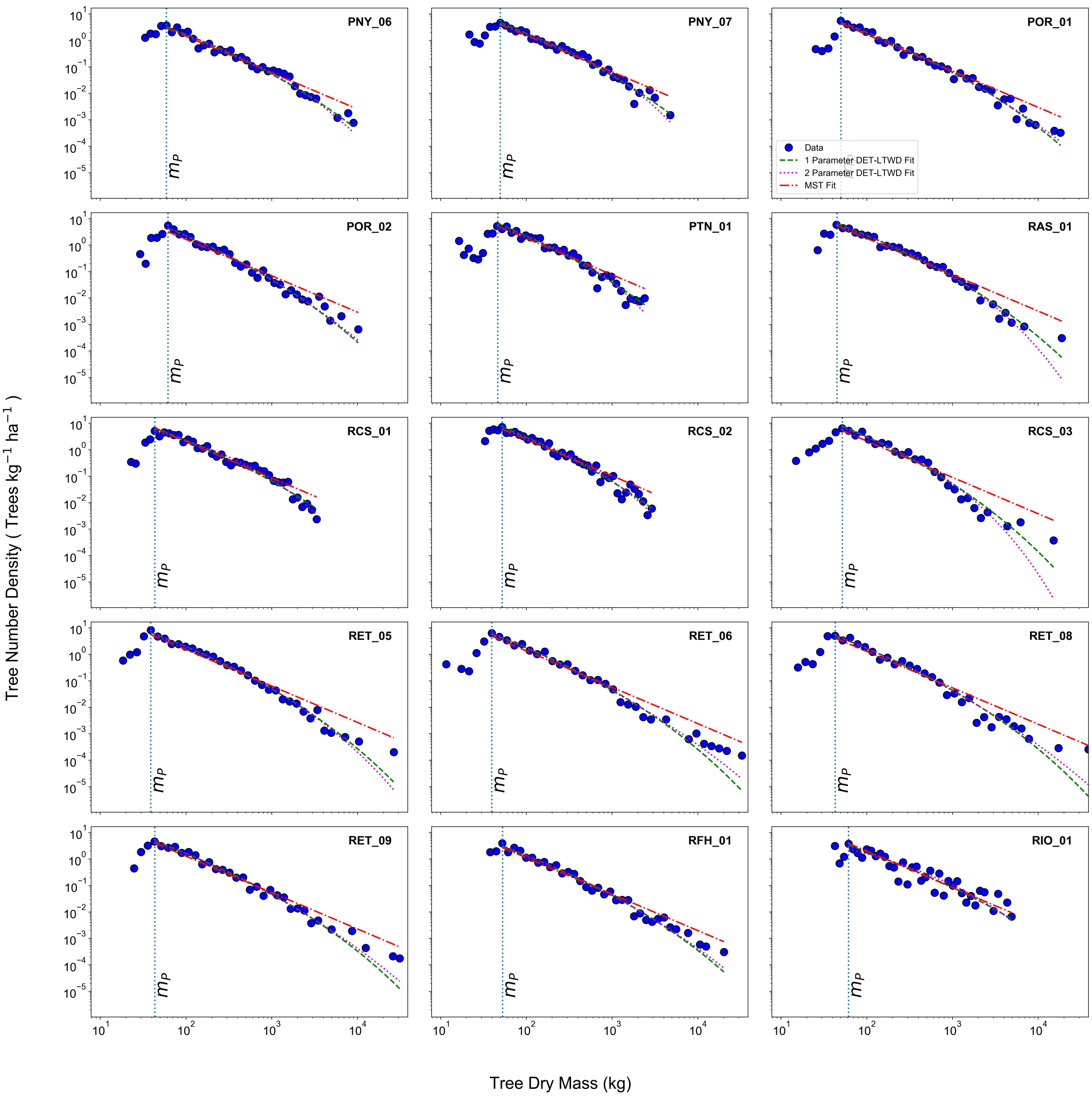

Figure S19: Mass Size Distributions of Individual Forest Plots.

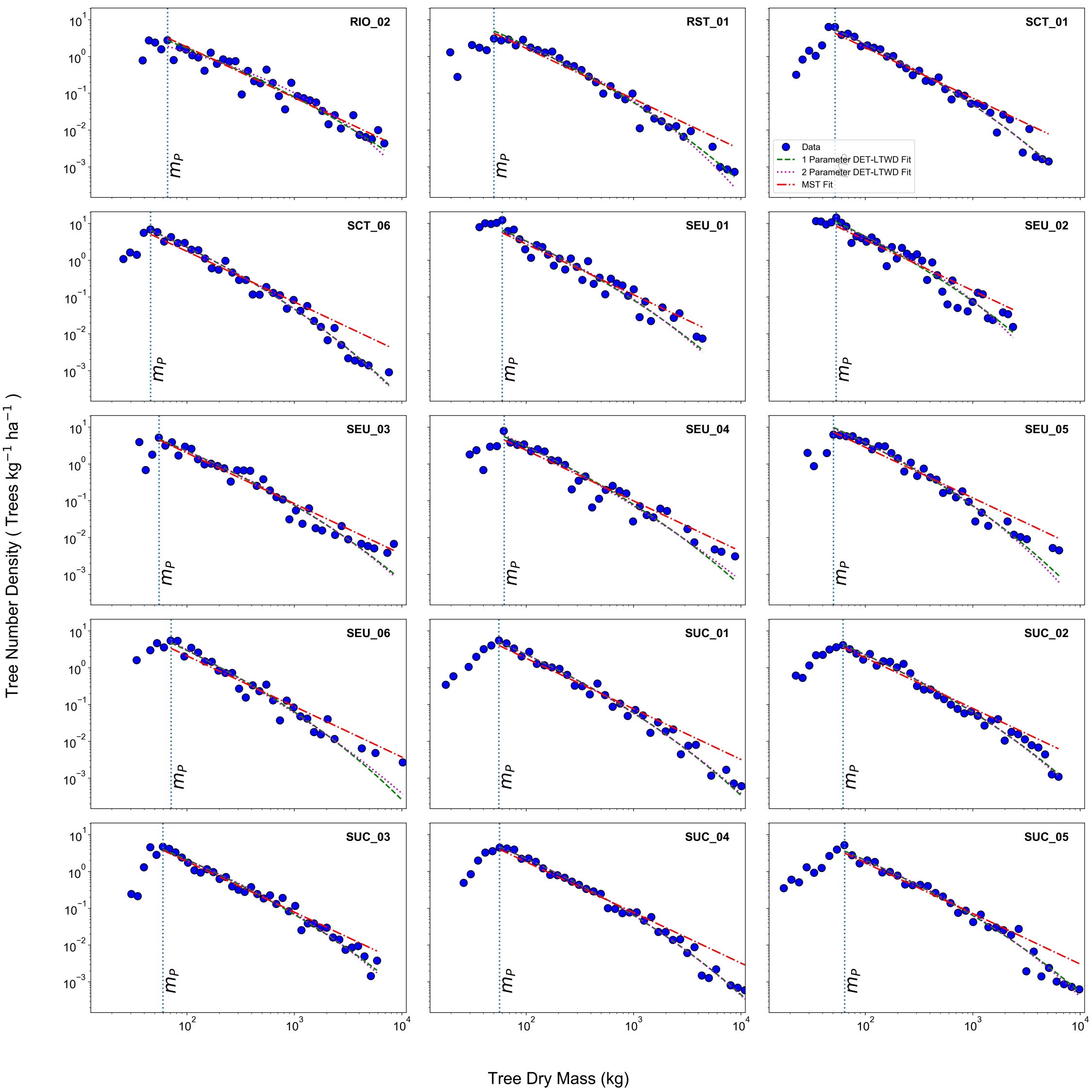

Figure S20: Mass Size Distributions of Individual Forest Plots.

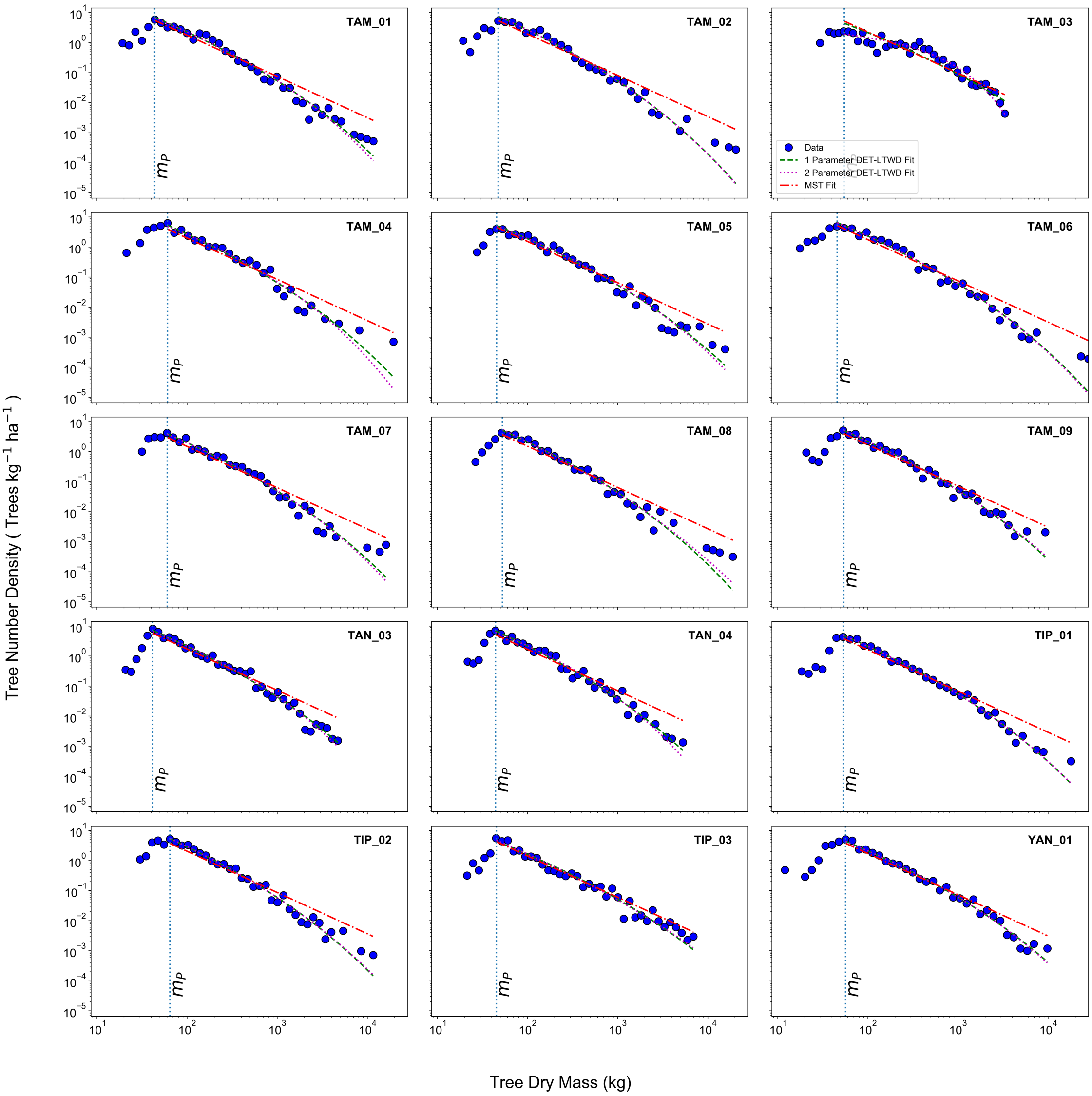

Figure S21: Mass Size Distributions of Individual Forest Plots.

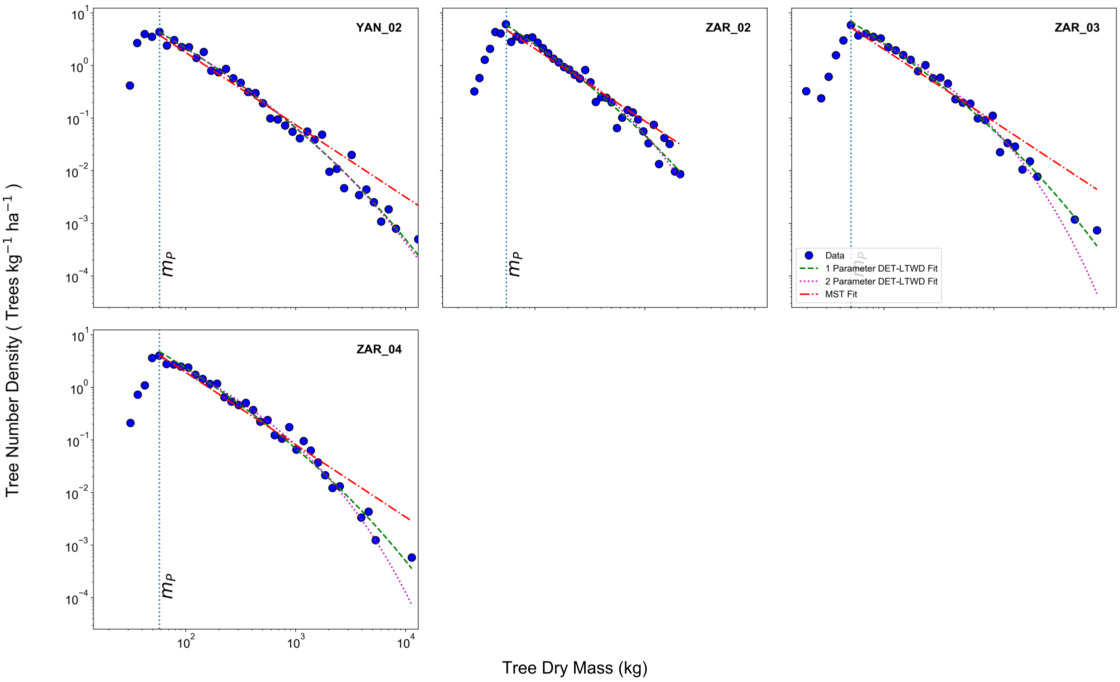

Figure S22: Mass Size Distributions of Individual Forest Plots.

7 Cumulative Biomass v Tree Mass

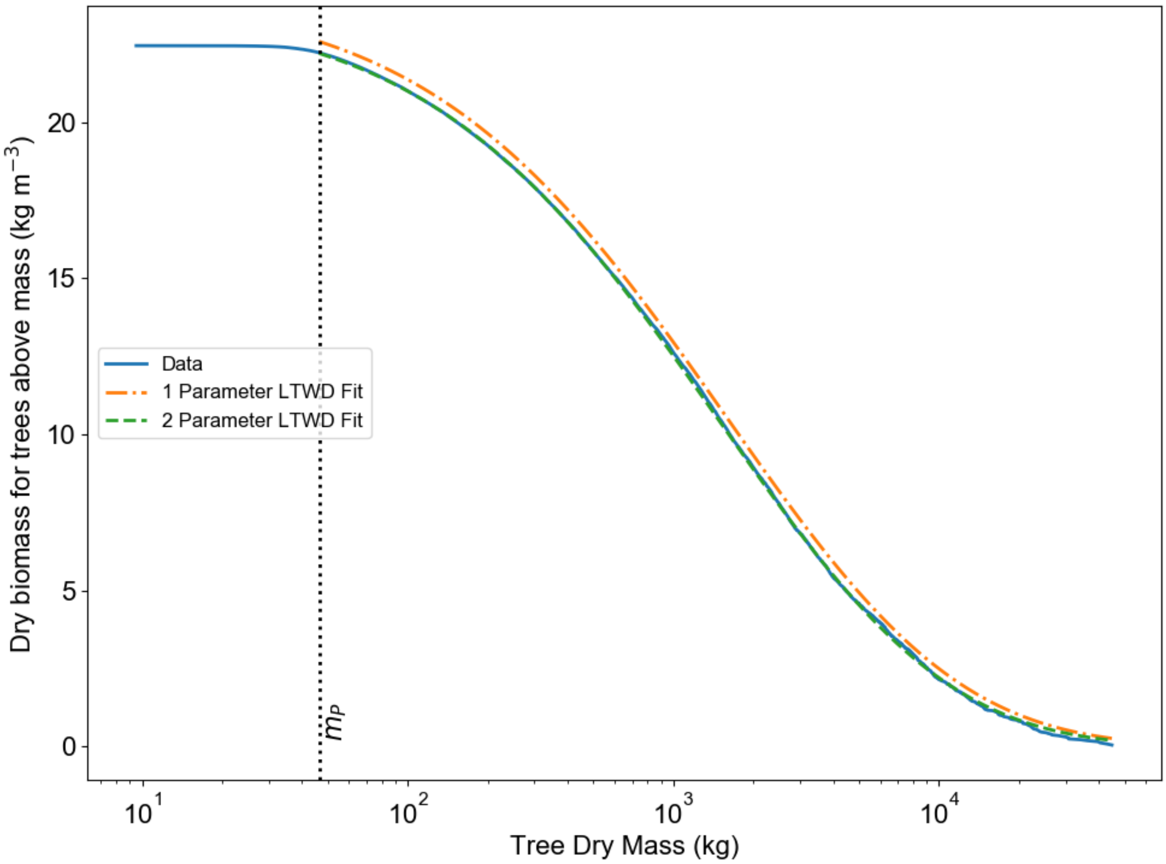

Figure S23: Shows the amount of biomass for all S.America consisting of trees equal or greater than a given tree mass, infinite maximum tree size assumption.

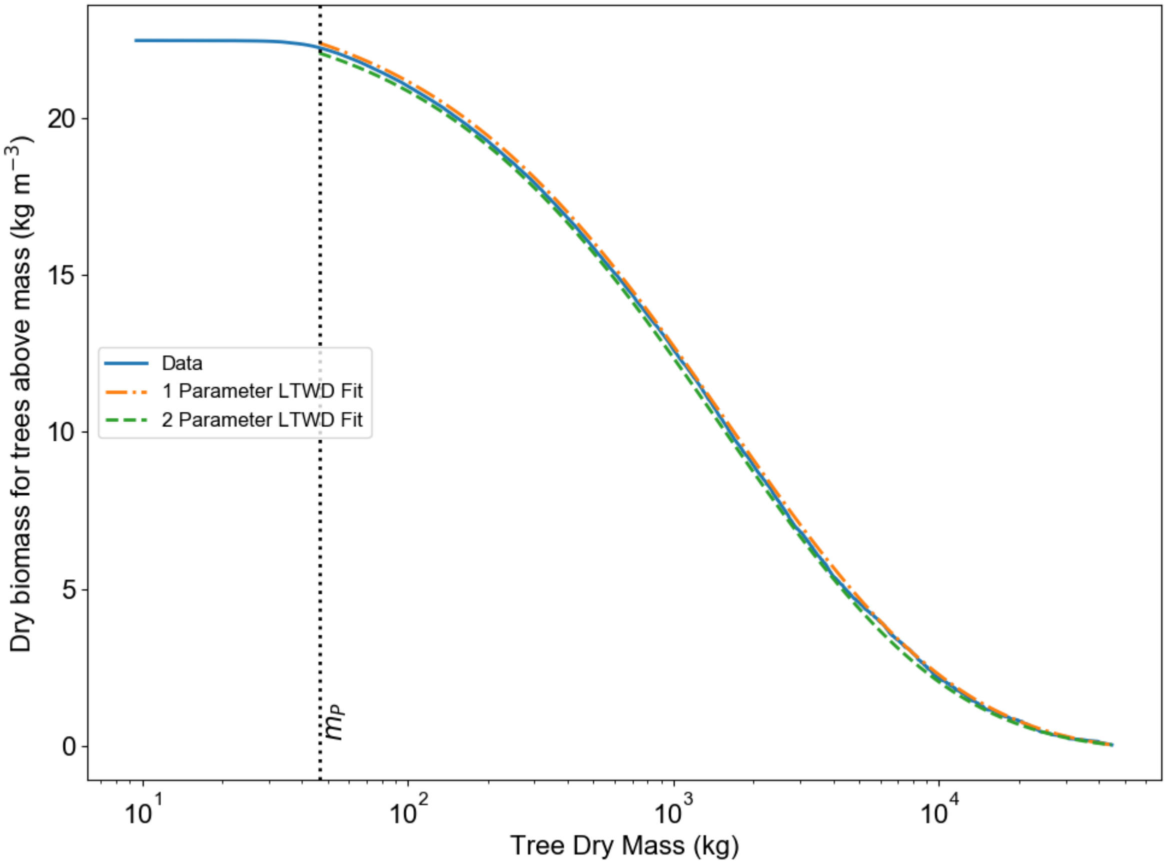

Figure S24: Shows the amount of biomass for all S.America consisting of trees equal or greater than a given tree mass, finite maximum tree size assumption (theory corrected by largest tree in the dataset).

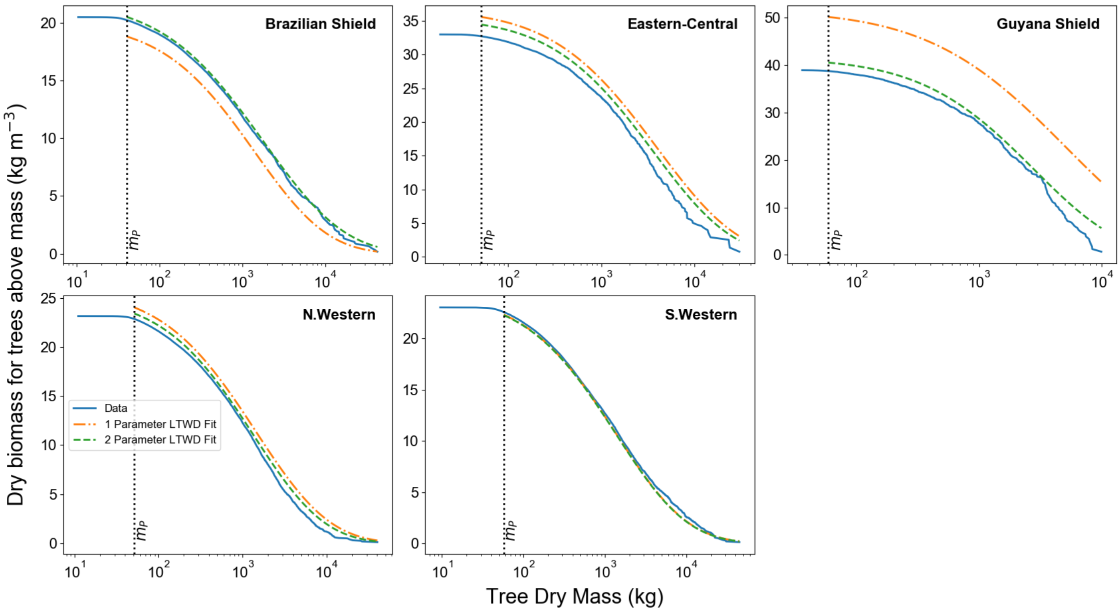

Figure S25: Shows the amount of biomass for each allometric region consisting of trees equal or greater than a given tree mass, infinite maximum tree size assumption.

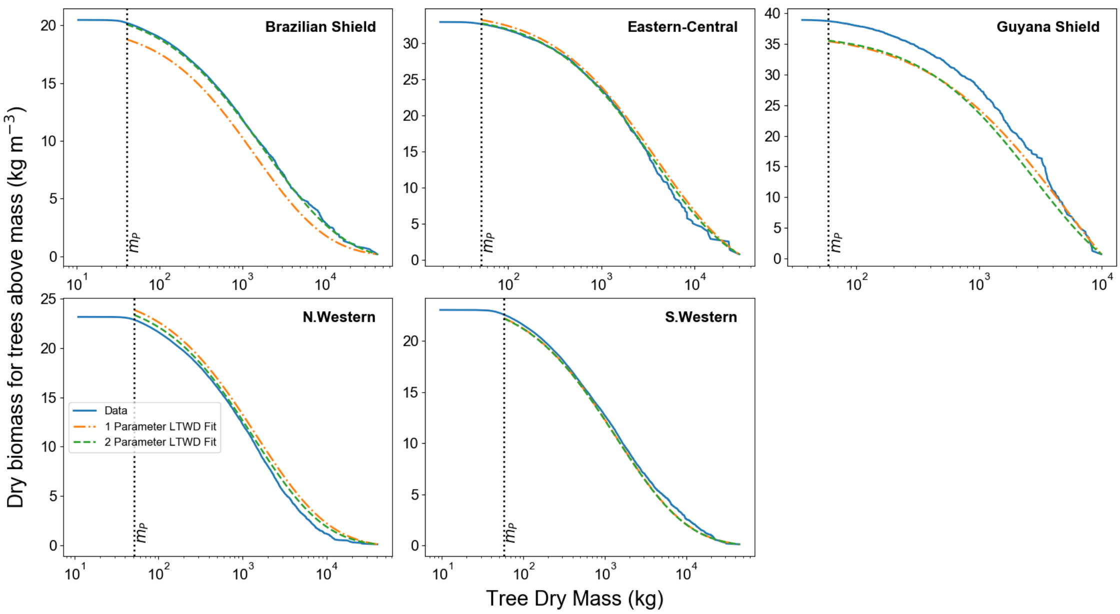

Figure S26: Shows the amount of biomass for each allometric region consisting of trees equal or greater than a given tree mass, finite maximum tree size assumption (theory corrected by largest tree in the dataset).

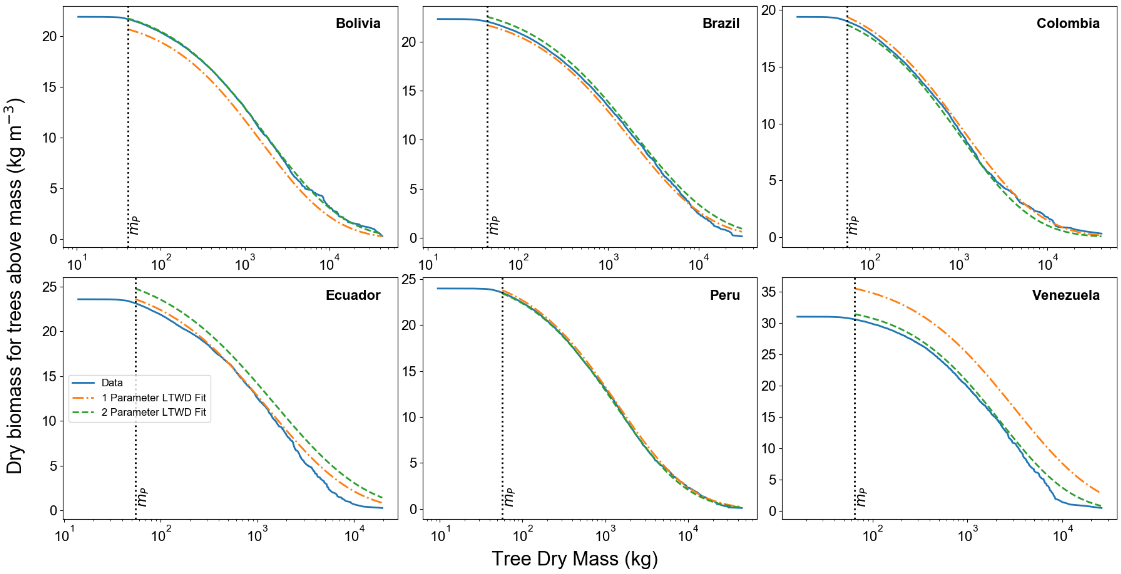

Figure S27: Shows the amount of biomass for each country consisting of trees equal or greater than a given tree mass, infinite maximum tree size assumption.

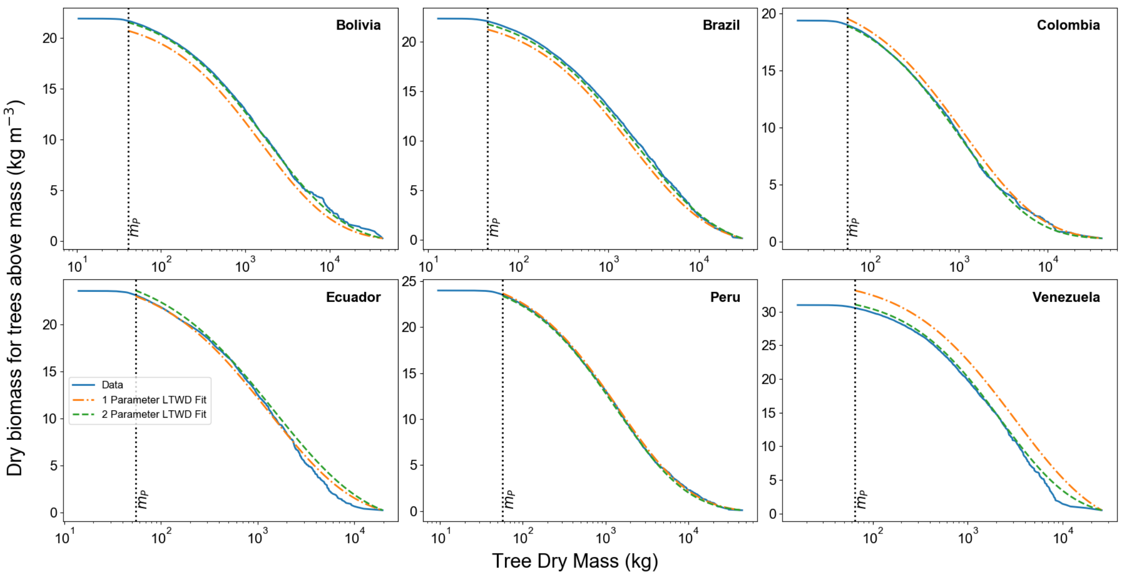

Figure S28: Shows the amount of biomass for each country consisting of trees equal or greater than a given tree mass, finite maximum tree size assumption (theory corrected by largest tree in the dataset).

8 Cumulative Biomass v Height and Trunk Diameter

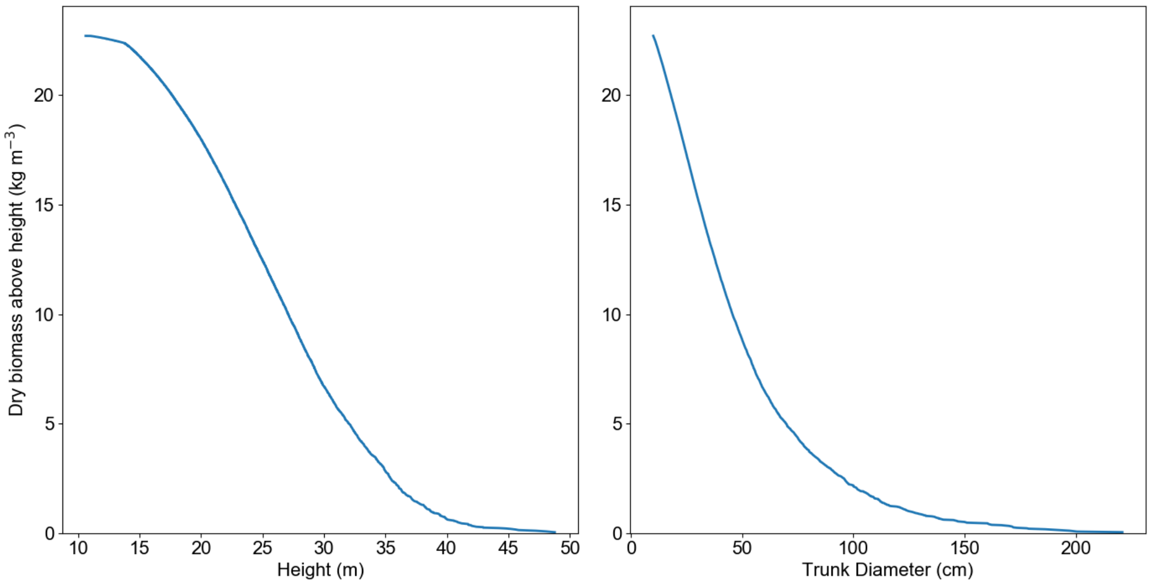

Figure S29: Shows the amount of biomass for all S.America consisting of trees equal or greater than a) a given height and b) a given diameter.

9 Effect of Sample Size on MST AIC Scores

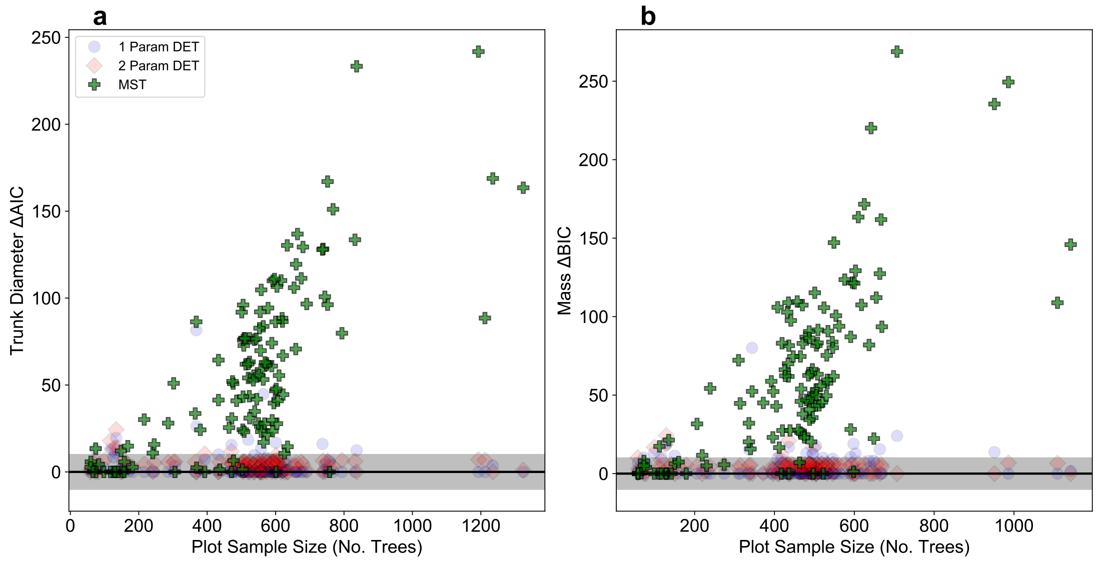

Figure S30: Shows the effect of forest plot sample size on the difference between MST AIC score and that of the best fitting model. Both DET models also shown for comparison. As the sample size increases the MST AIC scores increase (ie MST worsens). a) Trunk Diameter b) Mass.

10 Log Likelihood for Fitting DBH Distributions

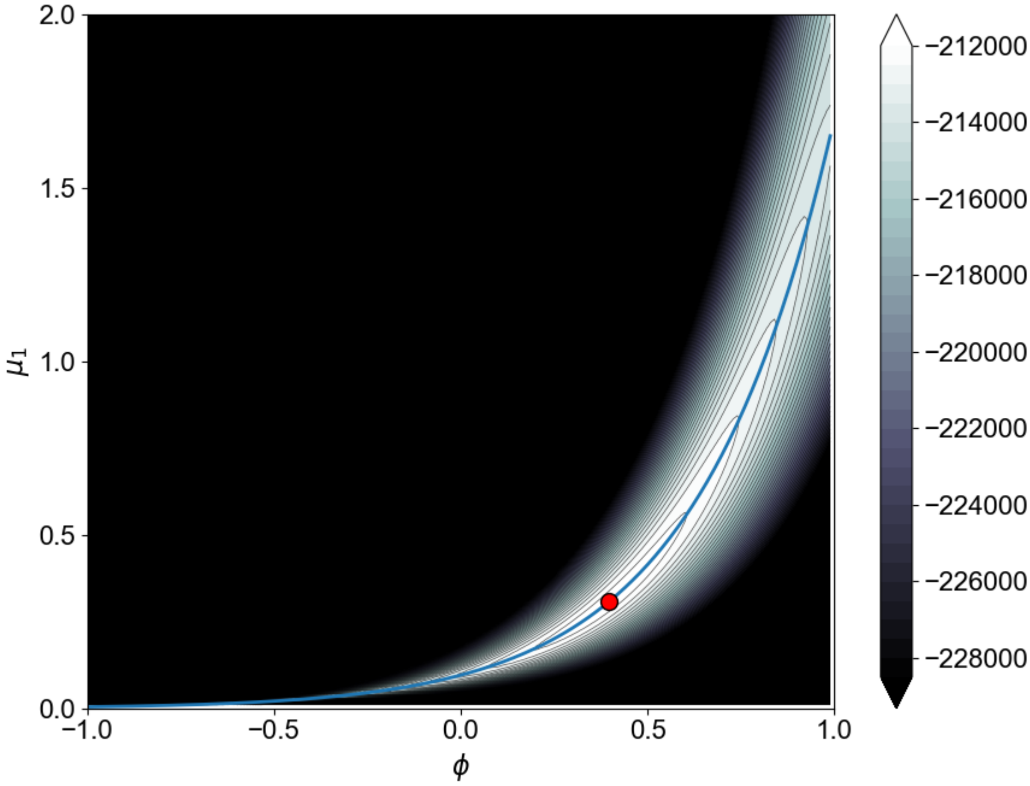

Figure S31: Shows the Log Likelihood (contours) for various choices of parameters ϕ and μ_1 for the whole dataset (all forest plots together). The line shows the best fit for a given ϕ and the red circle is the best fit found by MLE.

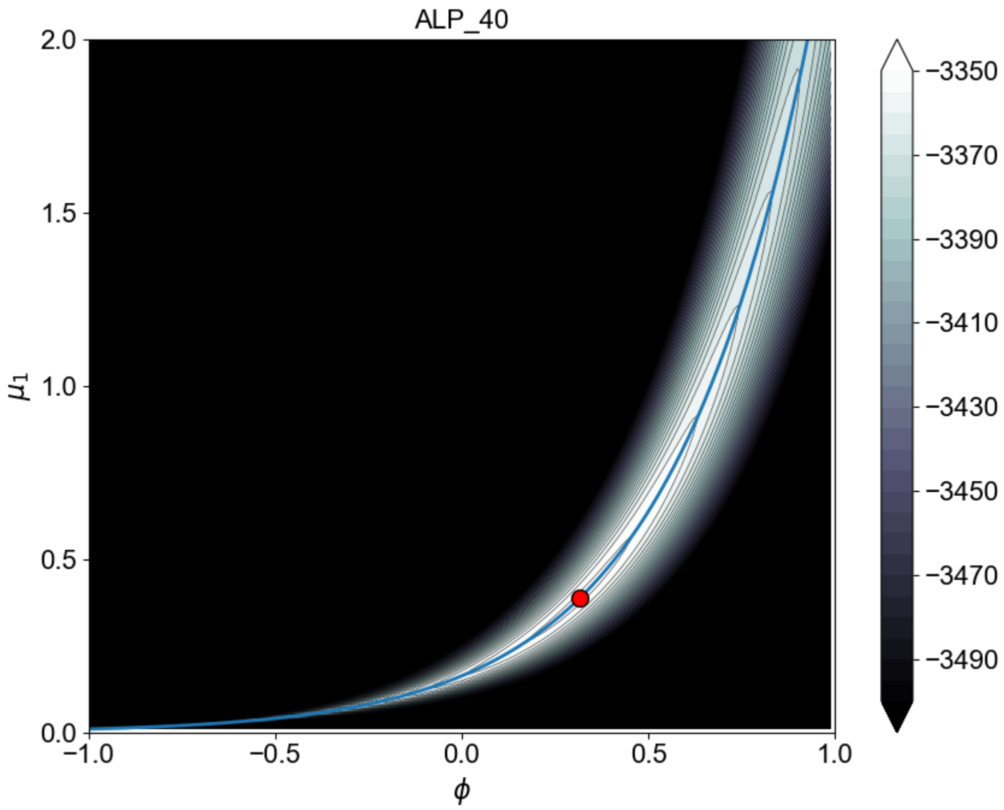

Figure S32: Shows the Log Likelihood (contours) for various choices of parameters ϕ and μ_1 for forest plot ALP_40. The line shows the best fit for a given ϕ and the red circle is the best fit found by MLE.