

## Supplementary material

## Appendix 1

## List of the 598 species and their characteristics

Note that species located on both east and west sides of the continent (n=26) have been kept in the two data sets.

Max. Height: maximum height reported in the species; Succ. St.: successional status; Max. Age: maximum longevity; W/E: location of the species on the continent (W: west; E: east; W+E: west and east). Range area are in  $\times 1000 \text{ km}^2$ .

Genus	Species	Family	Range area	Leaf Habit	Max. Height	Succ. St.	Max. Age	W/E
abies	amabilis	pinaceae	189.408	evergreen	3	3	3	W
abies	balsamea	pinaceae	3328.126	evergreen	3	3	2	W+E
abies	bracteata	pinaceae	0.206	evergreen	3	3	2	W
abies	concolor	pinaceae	180.677	evergreen	3	3	2	W
abies	fraserii	pinaceae	4.156	evergreen	3	3	2	E
abies	grandis	pinaceae	241.549	evergreen	3	3	3	W
abies	lasiocarpa	pinaceae	1359.768	evergreen	3	1	3	W
abies	magnifica	pinaceae	31.679	evergreen	3	3		W
abies	procera	pinaceae	34.052	evergreen	3	2	3	W
acacia	berlandieri	fabaceae	395.687	deciduous				E
acacia	farnesiana	fabaceae	577.899	deciduous	1			W
acacia	rigidula	fabaceae	223.795	deciduous				E
acacia	roemeriana	fabaceae	207.910	deciduous				E
acacia	tortuosa	fabaceae	551.622	deciduous				–
acacia	wrightii	fabaceae	211.208	deciduous				E
acer	barbatum	sapindaceae	426.849	deciduous	2	3	2	E
acer	circinatum	sapindaceae	233.429	deciduous	2	2		W
acer	glabrum	sapindaceae	1206.162	deciduous	1	1		W
acer	grandidentatum	sapindaceae	77.793	deciduous	2	2		W
acer	leucoderme	sapindaceae	128.037	deciduous	2			E
acer	macrophyllum	sapindaceae	302.628	deciduous	3	2	2	W
acer	negundo	sapindaceae	4324.487	deciduous	2	1	1	E
acer	nigrum	sapindaceae	985.611	deciduous	3	3	2	E
acer	pensylvanicum	sapindaceae	756.642	deciduous	2	2	1	E
acer	rubrum	sapindaceae	3245.055	deciduous	3	2	2	E
acer	saccharinum	sapindaceae	2526.282	deciduous	3	2	1	E
acer	saccharum	sapindaceae	2284.554	deciduous	3	3	2	E
acer	spicatum	sapindaceae	2100.981	deciduous	3	2	1	E
aesculus	californica	sapindaceae	66.218	deciduous	1	2		W
aesculus	glabra	sapindaceae	933.066	deciduous	3	3	1	E

aesculus	octandra	sapindaceae	253.707	deciduous	3	3		E
aesculus	parviflora	sapindaceae	64.800	deciduous				E
aesculus	pavia	sapindaceae	731.759	deciduous	1			E
aesculus	sylvatica	sapindaceae	115.251	deciduous	1			E
alnus	maritima	betulaceae	3.756	deciduous	1			E
alnus	oblongifolia	betulaceae	30.742	deciduous	1			W
alnus	rhombofolia	betulaceae	139.424	deciduous	2	1		W
alnus	rubra	betulaceae	357.871	deciduous	3	1	1	W
alnus	rugosa	betulaceae	5727.118	deciduous	1	1		W+E
alnus	serrulata	betulaceae	1424.317	deciduous	1			E
alnus	sinuata	betulaceae	1202.079	deciduous	1			W
alnus	tenuifolia	betulaceae	2749.494	deciduous	1	1		W
amelanchier	alnifolia	rosaceae	3963.375	deciduous	2	1	1	W
amelanchier	arborea	rosaceae	2797.204	deciduous	2	3		E
amelanchier	interior	rosaceae	51.190	deciduous	1			E
amelanchier	sanguinea	rosaceae	366.386	deciduous	1			E
amelanchier	utahensis	rosaceae	240.004	deciduous	1			W
annona	glabra	annonaceae	37.383	evergreen	2			E
aralia	spinosa	araliaceae	1238.398	deciduous	1	1		E
arbustus	arizonica	ericaceae	116.373	evergreen	2	2		W
arbustus	menziesii	ericaceae	148.970	evergreen	2	2	3	W
arbustus	texana	ericaceae	13.355	evergreen	1			E
asimina	parviflora	annonaceae	142.078	deciduous	2			E
asimina	triloba	annonaceae	1582.098	deciduous	2	2		E
avicennia	germinans	acanthaceae	313.816	evergreen	2			-
betula	allegghaniensis	betulaceae	1519.416	deciduous	3	2	2	E
betula	lenta	betulaceae	506.026	deciduous	2	1	2	E
betula	nigra	betulaceae	1484.457	deciduous	3	2		E
betula	occidentalis	betulaceae	740.264	deciduous	2	2		W
betula	papyrifera	betulaceae	7182.119	deciduous	3	1	1	W+E
betula	populifolia	betulaceae	419.622	deciduous	1	1		E
betula	uber	betulaceae	0.203	deciduous	1			E
bumelia	celastrina	sapotaceae	204.145	deciduous	1			-
bumelia	lanuginosa	sapotaceae	1201.039	deciduous	2			E
bumelia	lycioides	sapotaceae	345.243	deciduous	1			E
bumelia	tenax	sapotaceae	36.463	deciduous	1			E
bursera	fagaroides	burseraceae	519.994	deciduous	1			W
bursera	microphylla	burseraceae	148.286	deciduous	1			W
bursera	simaruba	burseraceae	16.921	deciduous	2			E
caesalpinia	mexicana	fabaceae	160.323	evergreen	1			W
calyptranthes	pallens	myrtaceae	0.907	evergreen	1			E
calyptranthes	zuzygium	myrtaceae	0.219	evergreen	2			E
canella	winterana	canellaceae	0.435	evergreen	1			E
canotia	holacantha	celastraceae	42.222	deciduous	1			W
carpinus	caroliniana	betulaceae	2765.650	deciduous	2	2	1	E
carya	aquatica	juglandaceae	660.014	deciduous	3			E
carya	cordiformis	juglandaceae	2538.472	deciduous	3	2	2	E
carya	floridana	juglandaceae	29.961	deciduous	3			E
carya	glabra	juglandaceae	1937.982	deciduous	3	3		E
carya	illinoensis	juglandaceae	794.911	deciduous	3	2		E

carya	laciniosa	juglandaceae	589.467	deciduous	3	3		E
carya	myristicaeformis	juglandaceae	30.422	deciduous	3			E
carya	ovata	juglandaceae	2060.410	deciduous	3	3		E
carya	pallida	juglandaceae	435.293	deciduous	3			E
carya	texana	juglandaceae	434.572	deciduous	3			E
carya	tomentosa	juglandaceae	1895.984	deciduous	3	2	3	E
castanea	alnifolia	fagaceae	45.437	deciduous				E
castanea	dentata	fagaceae	765.225	deciduous	3			E
castanea	ozarkensis	fagaceae	55.905	deciduous				E
castanea	pumila	fagaceae	890.312	deciduous	1	2		E
castanopsis	chrysophylla	fagaceae	82.382	evergreen	3	3		W
catalpa	bignonioides	bignoniaceae	137.301	deciduous	2			E
catalpa	speciosa	bignoniaceae	43.738	deciduous	3			E
ceanothus	arboreus	rhamnaceae	0.680	evergreen	1			W
ceanothus	spinousus	rhamnaceae	4.764	evergreen	1			W
ceanothus	thyrsoflorus	rhamnaceae	30.023	evergreen	1			W
celtis	laevigata	ulmaceae	1623.777	deciduous	3	2	1	E
celtis	lindheimeri	ulmaceae	1.242	deciduous	2			E
celtis	occidentalis	ulmaceae	2084.994	deciduous	2	3	2	E
celtis	reticulata	ulmaceae	689.026	deciduous	1	1		W
celtis	tenuifolia	ulmaceae	434.206	deciduous	1			E
cephalanthus	occidentalis	rubiaceae	3970.029	deciduous	2	1		W+E
cercidium	floridum	fabaceae	259.592	deciduous	1			W
cercidium	macrum	fabaceae	109.752	deciduous	1			W
cercidium	microphyllum	fabaceae	233.782	deciduous	1			W
cercis	canadensis	fabaceae	2243.549	deciduous	1	2		E
cercis	occidentalis	fabaceae	53.773	deciduous	1			W
cercocarpus	betuloides	rosaceae	81.369	evergreen	1	3		W
cercocarpus	breviflorus	rosaceae	50.565	evergreen	1			W
cercocarpus	ledifolius	rosaceae	209.924	evergreen	2	3	1	W
cercocarpus	traskiae	rosaceae	0.195	evergreen	1			W
cereus	giganteus	cactaceae	175.619	evergreen	2			W
chamaecyparis	lawsoniana	cupressaceae	14.274	evergreen	3	3	3	W
chamaecyparis	nootkatensis	cupressaceae	257.324	evergreen	3	2	3	W
chamaecyparis	thyoides	cupressaceae	140.474	evergreen	3	2	3	E
chilopsis	linearis	bignoniaceae	787.961	deciduous	1	1		W
chionanthus	virginicus	oleaceae	910.712	deciduous	1			E
chrysobalanus	icaco	chrysobalanaceae	27.363	evergreen	1			E
citharexylum	berlandieri	verbenaceae	72.551	deciduous				E
cladrastis	kentukea	fabaceae	52.289	deciduous	2			E
clethra	acuminata	clethraceae	48.202	deciduous	1			E
cliftonia	monophylla	cyrillaceae	101.199	evergreen	1			E
coccoloba	diversifolia	polygonaceae	6.667	evergreen	2			E
condalia	globosa	rhamnaceae	126.430	evergreen	1			W
condalia	hookeri	rhamnaceae	243.764	evergreen	1			E
cordia	boissieri	boraginaceae	189.050	evergreen	1			E
cornus	alternifolia	cornaceae	1922.824	deciduous	1	2		E
cornus	drummondii	cornaceae	1108.537	deciduous	1			E
cornus	florida	cornaceae	1984.878	deciduous	2	2		E
cornus	glabrata	cornaceae	39.465	deciduous	1			W

cornus	nuttallii	cornaceae	255.421	deciduous	3	2		W
cornus	sessilis	cornaceae	24.113	deciduous				W
cornus	stolonifera	cornaceae	7205.797	deciduous	1			W+E
cornus	stricta	cornaceae	695.490	deciduous	1			E
corylus	cornuta	betulaceae	2523.005	deciduous	1	2		W+E
cotinus	obovatus	anacardiaceae	29.405	deciduous	2			E
cowania	mexicana	rosaceae	431.937	evergreen	1			W
crataegus	chrysoarpa	rosaceae	603.182	deciduous				W+E
crataegus	columbiana	rosaceae	44.495	deciduous				W
crataegus	douglasii	rosaceae	956.677	deciduous	2	2		W
crataegus	erythropoda	rosaceae	17.883	deciduous				W
crataegus	succulenta	rosaceae	606.489	deciduous	1			E
crataegus	tracyi	rosaceae	8.679	deciduous				W
cupania	glabra	sapindaceae	0.037	evergreen	2			E
cupressus	arizonica	cupressaceae	71.413	evergreen	3	2	3	W
cupressus	bakeri	cupressaceae	1.017	evergreen	2	2		W
cupressus	goveniana	cupressaceae	0.664	evergreen	1	1		W
cupressus	guadalupensis	cupressaceae	1.112	evergreen	1			W
cupressus	macnabiana	cupressaceae	2.038	evergreen	2	1		W
cupressus	macrocarpa	cupressaceae	0.250	evergreen	3	1		W
cupressus	sargentii	cupressaceae	3.294	evergreen	3	1		W
cyrilla	racemiflora	cyrillaceae	369.959	evergreen	1	1		E
dalea	spinosa	fabaceae	107.885	deciduous	1			W
diospyros	texana	ebenaceae	367.707	evergreen	2	2		E
diospyros	virginiana	ericaceae	1921.965	evergreen	2	1		E
dodonaea	viscosa	sapindaceae	808.807	evergreen	1			-
dryopteris	laterifolia	rhamnaceae	0.662	evergreen	1			E
ehretia	anacua	boraginaceae	188.216	evergreen	2			E
elliottia	racemosa	ericaceae	1.892	deciduous	1			E
erythrina	flabelliformis	fabaceae	200.487		1			W
erythrina	herbacea	fabaceae	394.498					E
eugenia	axillaris	myrtaceae	28.608	evergreen	1			E
eugenia	foetida	myrtaceae	17.140	evergreen	1			E
eugenia	confusa	myrtaceae	0.193	evergreen	2			E
eugenia	rhombica	myrtaceae	0.060	evergreen	1			E
euonymus	atropurpureus	celastraceae	1079.304	deciduous	1			E
euonymus	occidentalis	celastraceae	59.239	deciduous	1			W
exothea	paniculata	sapindaceae	1.920	evergreen	2			E
eysenhardtia	polystachya	fabaceae	671.038	evergreen	1			-
fagus	grandifolia	fagaceae	2292.492	deciduous	3	3	2	E
ficus	aurea	moraceae	43.966	evergreen	2			E
ficus	citrifolia	moraceae	0.950	evergreen	2			E
forestiera	acuminata	oleaceae	382.080	deciduous	1			E
forestiera	angustifolia	oleaceae	554.991	evergreen	1			E
forestiera	phillyreoides	oleaceae	15.256	evergreen	1			W
forestiera	segregata	oleaceae	37.513	evergreen				E
franklinia	alatomaha	theaceae	0.071	deciduous	1			E
fraxinus	americana	oleaceae	2882.324	deciduous	3	1		E
fraxinus	anomala	oleaceae	89.567	deciduous	1	1		W
fraxinus	berlandieriana	oleaceae	207.651	deciduous				E

fraxinus	caroliniana	oleaceae	439.862	deciduous	2			E
fraxinus	cuspidata	oleaceae	12.063	deciduous	1			W
fraxinus	dipetala	oleaceae	60.799	deciduous	1			W
fraxinus	gooddingii	oleaceae	2.418	deciduous				W
fraxinus	greggii	oleaceae	179.972	deciduous	1			E
fraxinus	latifolia	oleaceae	155.794	deciduous	3	2	2	W
fraxinus	nigra	oleaceae	2202.618	deciduous	2	1		E
fraxinus	papillosa	oleaceae	2.137	deciduous				W
fraxinus	pennsylvanica	oleaceae	5211.268	deciduous	2	2		E
fraxinus	profunda	oleaceae	163.455	deciduous	3	2		E
fraxinus	quadrangulata	oleaceae	344.590	deciduous	2			E
fraxinus	texensis	oleaceae	26.018	deciduous	2			E
fraxinus	velutina	oleaceae	93.678	deciduous	2			W
fremontodendron	californicum	malvaceae	35.005	evergreen	1	2		W
fremontodendron	mexicanum	malvaceae	1.042		1			W
garrya	elliptica	garryaceae	34.375	evergreen	1			W
genipa	clusiifolia	rubiaceae	0.798	evergreen	1			E
gleditsia	aquatica	fabaceae	284.306	deciduous				E
gleditsia	tricanthos	fabaceae	1735.515	deciduous	3	1	1	E
gordonia	lasianthus	theaceae	226.974	evergreen	2	2		E
guaiacum	angustifolium	zygophyllaceae	329.764	evergreen	1			E
guaiacum	sanctum	zygophyllaceae	0.072	evergreen	1			E
gymnanthes	lucida	euphorbiaceae	0.368	evergreen	1			E
gymnocladus	dioicus	fabaceae	718.976	deciduous	3			E
halesia	carolina	styraceae	207.064	deciduous	1			E
halesia	diptera	styraceae	217.730	deciduous	1			E
halesia	parviflora	styraceae	21.599	deciduous	1			E
hamamelis	virginiana	hamamelidaceae	1941.296	deciduous	1	2		E
helietta	parvifolia	rutaceae	181.923	evergreen	1			E
holacantha	emoryi	simaroubaceae	87.981		1			W
hypelate	trifolia	sapindaceae	0.129	evergreen	2			E
ilex	ambigua	aquifoliaceae	447.249	deciduous	1	1		E
ilex	amelanchier	aquifoliaceae	15.641	deciduous	1			E
ilex	cassine	aquifoliaceae	171.352	evergreen	1			E
ilex	coriacea	aquifoliaceae	292.626	evergreen	1	3		E
ilex	decidua	aquifoliaceae	1232.122	deciduous	1	2		E
ilex	krugiana	aquifoliaceae	0.240	evergreen	1			E
ilex	laevigata	aquifoliaceae	109.046	deciduous	1			E
ilex	longipes	aquifoliaceae	6.411	evergreen				E
ilex	montana	aquifoliaceae	258.741	deciduous	2			E
ilex	myrtifolia	aquifoliaceae	189.601	evergreen	1			E
ilex	opaca	aquifoliaceae	1228.655	evergreen	2	3	1	E
ilex	verticillata	aquifoliaceae	1924.977	deciduous	1			E
ilex	vomitorea	aquifoliaceae	423.896	evergreen	1	2		E
illicium	floridanum	austrobaileyaceae	106.951	evergreen	1			E
illicium	parviflorum	austrobaileyaceae	1.604					E
juglans	californica	juglandaceae	5.449	deciduous	2		1	W
juglans	cinerea	juglandaceae	1504.127	deciduous	3	1	1	E
juglans	hindsii	juglandaceae	1.531	deciduous	2			W
juglans	major	juglandaceae	300.876	deciduous	2	2	2	W

juglans	microcarpa	juglandaceae	34.074	deciduous	2	3		E
juglans	nigra	juglandaceae	2305.521	deciduous	3	2		E
juniperus	ashei	cupressaceae	45.230	evergreen	2	2		E
juniperus	californica	cupressaceae	31.519	evergreen	1	3		W
juniperus	communis	cupressaceae	8276.413	evergreen	1	1	1	W+E
juniperus	depeana	cupressaceae	133.250	evergreen	2		3	W
juniperus	flaccida	cupressaceae	115.776	evergreen	1			W
juniperus	monosperma	cupressaceae	166.455	evergreen	2	3		W
juniperus	occidentalis	cupressaceae	107.558	evergreen	2	2	3	W
juniperus	osteosperma	cupressaceae	278.653	evergreen	1	2	3	W
juniperus	pinchotii	cupressaceae	92.518	evergreen	1		1	E
juniperus	scopulorum	cupressaceae	571.605	evergreen	2	2	3	W
juniperus	silicicola	cupressaceae	134.961	evergreen	2	1	3	E
juniperus	virginiana	cupressaceae	2805.420	evergreen	2	1	2	E
kalmia	latifolia	ericaceae	912.035	evergreen	1			E
koeberlinia	spinosa	koeberliniaceae	609.583	deciduous	1			W
larix	laricina	pinaceae	5960.031	deciduous	3	1	1	W+E
larix	lyalii	pinaceae	37.996	deciduous	2	1	3	W
larix	occidentalis	pinaceae	172.719	deciduous	3	1	3	W
leitneria	floridana	simaroubaceae	18.062	deciduous	1			E
leucaena	pulverulenta	fabaceae	200.567		2			E
leucaena	retusa	fabaceae	72.925		1			E
libocedrus	decurrens	cupressaceae	110.974	evergreen	3	2		W
licaria	triandra	lauraceae	0.064	evergreen				E
liquidambar	styraciflua	hamamelidaceae	1474.456	deciduous	3	1		E
liriodendron	tulipifera	magnoliaceae	1598.501	deciduous	3	1	2	E
lithocarpus	densiflorus	fagaceae	29.259	evergreen	3	3	2	W
lyonia	ferruginea	ericaceae	145.177	evergreen	1			E
lyonothamnus	floribundus	rosaceae	0.876		2			W
lysiloma	latisiliquum	fabaceae	2.748	deciduous	2			E
lysiloma	microphylla	fabaceae	218.549	evergreen	1			-
maclura	pomifera	moraceae	116.478	deciduous	2			E
magnolia	acuminata	magnoliaceae	499.419	deciduous	3	2	2	E
magnolia	ashei	magnoliaceae	5.286	deciduous	2			E
magnolia	fraseri	magnoliaceae	79.527	deciduous	2			E
magnolia	grandiflora	magnoliaceae	389.794	evergreen	3	3		E
magnolia	macrophylla	magnoliaceae	154.727	deciduous	2			E
magnolia	pyramidata	magnoliaceae	39.255	deciduous	2			E
magnolia	tripetala	magnoliaceae	183.572	deciduous	2			E
magnolia	virginiana	magnoliaceae	698.923	evergreen	3	2		E
malus	angustifolia	rosaceae	421.572	deciduous	1			E
malus	coronaria	rosaceae	433.617	deciduous	1			E
malus	diversifolia	rosaceae	311.823	deciduous				W
malus	ioensis	rosaceae	382.428	deciduous	1			E
metopium	toxiferum	anacardiaceae	2.618	evergreen	2			E
morus	microphylla	moraceae	79.921	deciduous	1			W
morus	rubra	moraceae	2787.304	deciduous	2	2	1	E
myrcianthes	fragrans	myrtaceae	5.530	evergreen	1			E
myrica	californica	myricaceae	46.086	evergreen	1			W
myrica	cerifera	myricaceae	702.792	evergreen	2	1		E

myrica	heterophylla	myricaceae	311.636	evergreen					E
myrica	inodora	myricaceae	45.700	evergreen	1				E
myrica	pennsylvanica	myricaceae	138.738	deciduous	1				E
nectandra	coriacea	lauraceae	1.825	evergreen	2				E
nolina	bigelovii	ruscaceae	26.832						W
nyssa	aquatica	nyssaceae	462.966	deciduous	3				E
nyssa	ogeche	nyssaceae	80.265	deciduous	2				E
nyssa	sylvatica	nyssaceae	1976.014	deciduous	3	2			E
olneya	tesota	fabaceae	281.746						W
opuntia	fulgida	cactaceae	147.864	evergreen	1				W
osmanthus	americanus	oleaceae	288.823	evergreen	2				E
ostrea	knowltonii	betulaceae	4.681	deciduous					W
ostrea	virginiana	betulaceae	3204.123	deciduous	2	3			E
oxydendron	arboreum	ericaceae	722.794	deciduous	2	2			E
parkinsonia	aculeata	fabaceae	692.357		2				W
persea	borbonia	lauraceae	484.473	evergreen	2	3			E
photinia	arbutifolia	rosaceae	94.408	evergreen	1				W
picea	breweriana	pinaceae	1.645	evergreen	3	3	3		W
picea	chihuahuana	pinaceae	7.451	evergreen					W
picea	engelmannii	pinaceae	725.938	evergreen	3	3	3		W
picea	glauca	pinaceae	7062.227	evergreen	3	2	2		W+E
picea	mariana	pinaceae	7170.232	evergreen	2	2	2		W+E
picea	pungens	pinaceae	80.869	evergreen	3	2	3		W
picea	rubens	pinaceae	401.946	evergreen	3	3	2		E
picea	sitchensis	pinaceae	317.756	evergreen	3	2	3		W
pinckneya	pubens	rubiaceae	67.107		1				E
pinus	albicaulis	pinaceae	397.204	evergreen	2	2	3		W
pinus	aristata	pinaceae	20.004	evergreen	2	3	3		W
pinus	attenuata	pinaceae	16.976	evergreen	2	1	1		W
pinus	ayacahuite	pinaceae	58.838	evergreen					-
pinus	balfouriana	pinaceae	2.588	evergreen	2	1	3		W
pinus	banksiana	pinaceae	3212.642	evergreen	3	1	2		W+E
pinus	caribaea	pinaceae	71.665	evergreen					-
pinus	cembroides	pinaceae	227.821	evergreen	2	2			W
pinus	clausa	pinaceae	57.938	evergreen	2	2	1		E
pinus	contorta	pinaceae	1730.737	evergreen	3	1	2		W
pinus	cooperi	pinaceae	59.495	evergreen					W
pinus	coulteri	pinaceae	6.710	evergreen	3	2	1		W
pinus	cubensis	pinaceae	3.643	evergreen					-
pinus	culminicola	pinaceae	0.058	evergreen					W
pinus	douglasiana	pinaceae	25.543	evergreen					W
pinus	durangensis	pinaceae	92.128	evergreen					W
pinus	echinata	pinaceae	1106.727	evergreen	3	1			E
pinus	edulis	pinaceae	275.696	evergreen	2	3	3		W
pinus	elliottii	pinaceae	257.880	evergreen	3	1			E
pinus	engelmannii	pinaceae	144.920	evergreen	3	2			W
pinus	flexilis	pinaceae	236.414	evergreen	3	1	3		W
pinus	glabra	pinaceae	228.772	evergreen	3	3	1		E
pinus	greggii	pinaceae	15.757	evergreen					E
pinus	hartwegii	pinaceae	20.546	evergreen					-

pinus	jeffreyi	pinaceae	85.098	evergreen	3	3	3	W
pinus	lambertiana	pinaceae	109.462	evergreen	3	2	3	W
pinus	lawsonii	pinaceae	27.509	evergreen				–
pinus	leiophylla	pinaceae	182.233	evergreen	2	2		W
pinus	longaeva	pinaceae	8.567	evergreen	2	3	3	W
pinus	lumholtzii	pinaceae	88.171	evergreen				W
pinus	maximartinezii	pinaceae	0.066	evergreen				W
pinus	michoacana	pinaceae	62.821	evergreen				–
pinus	monophylla	pinaceae	75.932	evergreen	2	3	3	W
pinus	montezumae	pinaceae	56.519	evergreen	3			–
pinus	monticola	pinaceae	326.566	evergreen	3	1	2	W
pinus	muricata	pinaceae	2.358	evergreen	3	1		W
pinus	nelsonii	pinaceae	7.287	evergreen				E
pinus	occidentalis	pinaceae	9.509	evergreen				–
pinus	oocarpa	pinaceae	252.705	evergreen				–
pinus	palustris	pinaceae	516.462	evergreen	3	1	2	E
pinus	patula	pinaceae	9.094	evergreen				E
pinus	pinceana	pinaceae	19.890	evergreen				E
pinus	ponderosa	pinaceae	742.013	evergreen	3	1	3	W
pinus	pringlei	pinaceae	36.073	evergreen				–
pinus	pseudostrobus	pinaceae	140.297	evergreen				–
pinus	pungens	pinaceae	89.882	evergreen	2	1	2	E
pinus	quadrifolia	pinaceae	5.212	evergreen	1	3	3	W
pinus	radiata	pinaceae	0.670	evergreen	3	1	1	W
pinus	resinosa	pinaceae	1184.746	evergreen	3	2	2	E
pinus	rigida	pinaceae	475.554	evergreen	3	1	2	E
pinus	sabiniana	pinaceae	39.221	evergreen	3	2	2	W
pinus	serotina	pinaceae	311.712	evergreen	3	2	3	E
pinus	strobiformis	pinaceae	182.327	evergreen	3	2	3	W
pinus	strobus	pinaceae	1858.906	evergreen	3	2		E
pinus	taeda	pinaceae	864.211	evergreen	3	2	2	E
pinus	teocote	pinaceae	118.611	evergreen				–
pinus	torreyana	pinaceae	0.241	evergreen	2	2	1	W
pinus	tropicalis	pinaceae	7.164	evergreen				–
pinus	virginiana	pinaceae	528.536	evergreen	3	1	1	E
pinus	washoensis	pinaceae	0.438	evergreen	3	3	2	W
Pisonia	rotundata	nyctaginaceae	0.080					E
pistacia	texana	anacardiaceae	3.455	deciduous	1			E
pithecellobium	flexicaule	fabaceae	163.275	evergreen	1			E
pithecellobium	guadelupense	fabaceae	1.597	evergreen	1			E
pithecellobium	pallens	fabaceae	179.248	evergreen	1			E
pithecellobium	unguis-cati	fabaceae	0.858	evergreen				E
planera	aquatica	ulmaceae	419.903	deciduous	2			E
platanus	occidentalis	proteaceae	2554.163	deciduous	3	2	2	E
platanus	racemosa	proteaceae	67.306	deciduous	3			W
platanus	wrightii	proteaceae	104.870	deciduous				W
populus	angustifolia	salicaceae	326.795	deciduous	2	1	2	W
populus	arizonica	salicaceae	48.126	deciduous				W
populus	balsamifera	salicaceae	5907.322	deciduous	3	1	2	W+E
populus	deltoides	salicaceae	3891.577	deciduous	3	1	2	E



populus	fremontii	salicaceae	229.419	deciduous	3	1	1	W
populus	grandidentata	salicaceae	2270.768	deciduous	2	1	1	E
populus	heterophylla	salicaceae	213.487	deciduous	3			E
populus	hinckleyana	salicaceae	0.243	deciduous				W
populus	tremuloides	salicaceae	7906.853	deciduous	2	1	2	W+E
populus	trichocarpa	salicaceae	1365.895	deciduous	3	1	2	W
prosopis	pubescens	fabaceae	150.014	deciduous	1			W
prunus	alleghaniensis	rosaceae	13.382	deciduous	1			E
prunus	americana	rosaceae	2451.690	deciduous	2			E
prunus	angustifolia	rosaceae	1233.023	deciduous	1			E
prunus	caroliniana	rosaceae	403.712	evergreen	2			E
prunus	emarginata	rosaceae	505.720	deciduous	1	1	1	W
prunus	fremontii	rosaceae	25.682	deciduous	1			W
prunus	hortulana	rosaceae	173.322	deciduous				E
prunus	ilicifolia	rosaceae	58.740	evergreen	1			W
prunus	lyonii	rosaceae	1.022	evergreen	1			W
prunus	mexicana	rosaceae	718.025	deciduous	1			E
prunus	munsoniana	rosaceae	169.205	deciduous	1			E
prunus	myrtifolia	rosaceae	0.740	evergreen	2			E
prunus	nigra	rosaceae	494.259	deciduous	1			E
prunus	pennsylvanica	rosaceae	4777.342	deciduous	2	1		W+E
prunus	serotina	rosaceae	3637.354	deciduous	3	1	1	E
prunus	subcordata	rosaceae	102.208	deciduous	1			W
prunus	umbellata	rosaceae	474.917	deciduous	1			E
prunus	virginiana	rosaceae	6246.044	deciduous	1	1		W+E
pseudotsuga	macrocarpa	pinaceae	6.723	evergreen	2	3	3	W
pseudotsuga	menziesii	pinaceae	1122.115	evergreen	3	2	3	W
psidium	longipes	myrtaceae	0.257	evergreen				E
ptelea	crenulata	rutaceae	23.774	deciduous	1			W
ptelea	trifoliata	rutaceae	1923.664	deciduous	1			E
quercus	agrifolia	fagaceae	58.503	evergreen	3	3	2	W
quercus	ajoensis	fagaceae	2.043	evergreen	1			W
quercus	alba	fagaceae	2571.213	deciduous	3	2	3	E
quercus	arizonica	fagaceae	59.126	evergreen	2	2		W
quercus	arkansana	fagaceae	12.355	deciduous	3			E
quercus	bicolor	fagaceae	869.804	deciduous	3	3	2	E
quercus	chapmanii	fagaceae	84.508	evergreen	1			E
quercus	chrysolepis	fagaceae	120.452	evergreen	3			W
quercus	coccinea	fagaceae	934.420	deciduous	3	1		E
quercus	douglasii	fagaceae	57.659	deciduous	2		2	W
quercus	dunnii	fagaceae	22.199	evergreen	1			W
quercus	durandii	fagaceae	180.117	deciduous	3			E
quercus	ellipsoidalis	fagaceae	285.278	deciduous	2	2		E
quercus	emoryi	fagaceae	38.351	evergreen	2	3		W
quercus	engelmannii	fagaceae	5.784	evergreen	2			W
quercus	falcata	fagaceae	1339.920	deciduous	3	2	1	E
quercus	gambelii	fagaceae	320.785	deciduous	2	2	1	W
quercus	garryana	fagaceae	128.299	deciduous	2	2	3	W
quercus	georgiana	fagaceae	2.940	deciduous	1			E
quercus	glaucooides	fagaceae	21.081	deciduous	2			E

quercus	graciliformis	fagaceae	0.449	evergreen				W
quercus	gravesii	fagaceae	5.785	deciduous	3			E
quercus	grisea	fagaceae	28.309	evergreen	2	2		W
quercus	hypoleucooides	fagaceae	31.862		2			W
quercus	ilicifolia	fagaceae	207.350	deciduous	1	1		E
quercus	imbricaria	fagaceae	659.030	deciduous	3			E
quercus	incana	fagaceae	394.979	deciduous	2	2		E
quercus	kelloggii	fagaceae	83.342	deciduous	3	2	3	W
quercus	laevis	fagaceae	374.473	deciduous	2	2		E
quercus	laurifolia	fagaceae	516.294	evergreen	3	2		E
quercus	lobata	fagaceae	96.074	deciduous	3	2	3	W
quercus	lyrata	fagaceae	913.561	deciduous	3	2	2	E
quercus	macdonaldii	fagaceae	0.680					W
quercus	macrocarpa	fagaceae	2470.176	deciduous	3	2	2	E
quercus	marilandica	fagaceae	1841.590	deciduous	2	2		E
quercus	michauxii	fagaceae	957.219	deciduous	3	2		E
quercus	mohriana	fagaceae	75.239	evergreen	2			E
quercus	muehlenbergii	fagaceae	1741.622	deciduous	3	2		E
quercus	myrtifolia	fagaceae	98.320	evergreen	2			E
quercus	nigra	fagaceae	1050.727	deciduous	3	1		E
quercus	nuttallii	fagaceae	270.769	deciduous	3			E
quercus	oblongifolia	fagaceae	21.825	deciduous	1	3		W
quercus	oglethorpensis	fagaceae	5.030	deciduous	3			E
quercus	palustris	fagaceae	987.007	deciduous	3	2	1	E
quercus	phellos	fagaceae	1000.085	deciduous	3	3		E
quercus	prinus	fagaceae	797.099	deciduous	3	2		E
quercus	pungens	fagaceae	28.405	evergreen	1	3		W
quercus	rubra	fagaceae	2929.026	deciduous	3	2		E
quercus	rugosa	fagaceae	455.622	evergreen				-
quercus	shumardii	fagaceae	1481.199	deciduous	3	2	2	E
quercus	stellata	fagaceae	2133.515	deciduous	2	2	2	E
quercus	tomentella	fagaceae	1.124		2			W
quercus	toumeyii	fagaceae	5.429	evergreen	1			W
quercus	turbinella	fagaceae	79.070	evergreen	1			W
quercus	velutina	fagaceae	2297.828	deciduous	3	2	2	E
quercus	virginiana	fagaceae	518.460	evergreen	2	2		E
quercus	wislizeni	fagaceae	78.660	evergreen	2	3	2	W
rapanea	punctata	myrsinaceae	40.248	evergreen	1			E
reynosia	septentrionalis	rhamnaceae	0.376	evergreen	1			E
rhamnus	betulaefolia	rhamnaceae	179.736	deciduous	1			W
rhamnus	californica	rhamnaceae	196.442	evergreen	1			W
rhamnus	caroliniana	rhamnaceae	791.698	deciduous	2			E
rhamnus	crocea	rhamnaceae	126.162	evergreen	1			W
rhamnus	purshiana	rhamnaceae	339.797	deciduous	2	2		W
rhizophora	mangle	rhizophoraceae	607.257	evergreen	3			-
rhododendron	catawbiense	ericaceae	71.487	evergreen				E
rhododendron	macrophyllum	ericaceae	68.497	evergreen	1			W
rhododendron	maximum	ericaceae	332.399	evergreen	2	3	1	E
rhus	choriophylla	anacardiaceae	13.685	evergreen	1			W
rhus	copallina	anacardiaceae	2038.005	deciduous	1	1		E

rhus	glabra	anacardiaceae	2901.259	deciduous	1	3		W+E
rhus	integrifolia	anacardiaceae	16.904	evergreen	1			W
rhus	kearneyi	anacardiaceae	4.388	evergreen	1			W
rhus	lanceolata	anacardiaceae	168.353	deciduous	1			-
rhus	laurina	anacardiaceae	28.517	evergreen	1			W
rhus	ovata	anacardiaceae	46.236	evergreen	1			W
rhus	typhina	anacardiaceae	1312.231	deciduous	1	1		E
robinia	kelseyi	fabaceae	3.788	deciduous				E
robinia	neomexicana	fabaceae	48.752	deciduous	1	2		W
robinia	pseudoacacia	fabaceae	439.868	deciduous	2	1	1	E
robinia	viscosa	fabaceae	11.949	deciduous	1			E
roystonea	elata	arecaceae	0.226		3			E
sabal	mexicana	arecaceae	66.540		2			-
sabal	minor	arecaceae	609.290		1			E
sabal	palmetto	arecaceae	119.347		3			E
salix	alaxensis	salicaceae	2566.473	deciduous	1	1		W+E
salix	amygdaloides	salicaceae	3386.342	deciduous	2	1		W+E
salix	arbusculoides	salicaceae	3244.328	deciduous	1	1		W+E
salix	bebbiana	salicaceae	6744.248	deciduous	1	1		W+E
salix	bonplandiana	salicaceae	563.414	deciduous	2			-
salix	caroliniana	salicaceae	596.415	deciduous	1			E
salix	discolor	salicaceae	3949.854	deciduous	1	1		W+E
salix	exigua	salicaceae	6827.740	deciduous	1	1		W+E
salix	floridana	salicaceae	3.279	deciduous				E
salix	fluviatilis	salicaceae	6.905	deciduous	2			W
salix	geyeriana	salicaceae	309.360	deciduous	1	2		W
salix	hookeriana	salicaceae	38.039	deciduous	1			W
salix	laevigata	salicaceae	124.240	deciduous	2			W
salix	lasiandra	salicaceae	2492.397	deciduous	2	1		W
salix	lasiolepis	salicaceae	249.348	deciduous	2			W
salix	lucida	salicaceae	3538.247	deciduous	1			E
salix	nigra	salicaceae	3400.208	deciduous	3	1	1	W+E
salix	pellita	salicaceae	1630.146	deciduous	1			E
salix	petiolaris	salicaceae	2169.524	deciduous	1			W+E
salix	pyrifolia	salicaceae	3064.834	deciduous	1			W+E
salix	scouleriana	salicaceae	3175.141	deciduous	2	1		W
salix	sericea	salicaceae	1003.044	deciduous				E
salix	sessilifolia	salicaceae	18.110	deciduous	1			W
salix	sitchensis	salicaceae	536.427	deciduous	1			W
salix	taxifolia	salicaceae	466.519	deciduous				-
salix	tracyi	salicaceae	10.301	deciduous	1			W
sambucus	callicarpa	caprifoliaceae	428.892	deciduous	1	2		W
sambucus	canadensis	caprifoliaceae	3536.838	deciduous	1			E
sambucus	glauca	caprifoliaceae	493.440	deciduous	2			W
sambucus	mexicana	caprifoliaceae	189.150	deciduous	1			-
sambucus	velutina	caprifoliaceae	12.216	deciduous	1			W
sapindus	drummondii	sapindaceae	785.461	deciduous	2			W
sapium	biloculare	euphorbiaceae	118.161	deciduous	1	3		W
sassafras	albidum	lauraceae	2184.763	deciduous	2	1		E
sequoia	sempervirens	cupressaceae	11.818	evergreen	3	3	3	W

sequoiadendron	giganteum	cupressaceae	0.143	evergreen	3	3	3	W
serenoa	repens	arecaceae	197.551		1	2		E
sheperdia	argentea	rhamnaceae	982.254		1	2		W
solanum	erianthum	solanaceae	948.993	evergreen	1			–
sophora	affinis	fabaceae	78.533					E
sophora	secundiflora	fabaceae	488.850	evergreen	2	2		–
sorbus	americana	rosaceae	1888.813	deciduous	1	2		E
sorbus	decora	rosaceae	2357.750	deciduous	2			E
sorbus	scopulina	rosaceae	1213.659	deciduous				W
sorbus	sitchensis	rosaceae	730.375	deciduous	1	2		W
staphylea	bolanderi	staphyleaceae	10.361		1			W
staphylea	trifolia	staphyleaceae	1273.151		1			E
stewartia	malacodendron	theaceae	97.134	deciduous	1			E
stewartia	ovata	theaceae	52.965	deciduous	1			E
styrax	grandifolia	styraceae	511.862	deciduous	2			E
styrax	platanifolia	styraceae	19.956					E
swietenia	mahagoni	meliaceae	11.519	evergreen	2			E
symplocos	tinctoria	symplocaceae	618.707	evergreen	1			E
taxodium	distichum	cupressaceae	889.092	evergreen	3	3	3	E
taxodium	mucronatum	cupressaceae	131.824	evergreen	3		3	–
taxus	brevifolia	taxaceae	388.269	evergreen	3	3	3	W
taxus	floridana	taxaceae	0.566	evergreen	1	2		E
tetrazygia	bicolor	melastomataceae	0.459	evergreen	1			E
thuja	occidentalis	cupressaceae	1635.711	evergreen	3	3	3	E
thuja	plicata	cupressaceae	434.950	evergreen	3	3	3	W
tilia	americana	malvaceae	2245.861	deciduous	3	2	2	E
tilia	caroliniana	malvaceae	667.935	deciduous	2			E
tilia	heterophylla	malvaceae	553.494	deciduous	3	3	3	E
torreya	californica	taxaceae	3.124	evergreen	2	2		W
torreya	taxifolia	taxaceae	0.810	evergreen	2	2		E
toxicodendron	vernix	anacardiaceae	577.463	deciduous	1			E
trema	micrantha	ulmaceae	12.238	evergreen	3			E
tsuga	canadensis	pinaceae	1212.771	evergreen	3	3	3	E
tsuga	caroliniana	pinaceae	20.317	evergreen	3	3		E
tsuga	heterophylla	pinaceae	483.512	evergreen	3	3	3	W
tsuga	mertensiana	pinaceae	287.358	evergreen	3	3	3	W
ulmus	alata	ulmaceae	1213.303	deciduous	2			E
ulmus	americana	ulmaceae	5457.227	deciduous	3	2	2	E
ulmus	crassifolia	ulmaceae	450.876	deciduous	2			E
ulmus	rubra	ulmaceae	2894.135	deciduous	3	2	2	E
ulmus	serotina	ulmaceae	39.254	deciduous	2			E
ulmus	thomasii	ulmaceae	800.871	deciduous	3			E
umbellularia	californica	lauraceae	82.192	evergreen	3	2		W
ungnadia	speciosa	sapindaceae	30.954	deciduous	1			–
vaccinium	arboreum	ericaceae	1089.193	evergreen	1	2		E
vauquelinia	californica	rosaceae	10.112	evergreen	1			W
viburnum	lentago	adoxaceae	1228.276	deciduous	1			E
viburnum	nudum	adoxaceae	585.851	deciduous	1			E
viburnum	obovatum	adoxaceae	166.528	deciduous	1			E
viburnum	prunifolium	adoxaceae	908.769	deciduous	1			E

viburnum	rufidulum	adoxaceae	1226.113	deciduous	1		E
washingtonia	filifera	arecaceae	1.244		2	2	W
yucca	aloifolia	agavaceae	32.158	evergreen	1		E
yucca	brevifolia	agavaceae	60.662	evergreen	2	3	W
yucca	carnerosana	agavaceae	6.303	evergreen	1		-
yucca	elata	agavaceae	254.983	evergreen	1	1	W
yucca	faxoniana	agavaceae	6.135	evergreen	2		W
yucca	gloriosa	agavaceae	6.437	evergreen	1		E
yucca	mohavensis	agavaceae	68.093	evergreen	1		W
yucca	rostrata	agavaceae	4.923	evergreen	1		E
yucca	schottii	agavaceae	10.216	evergreen	1		W
yucca	torreyi	agavaceae	204.072	evergreen	1		W
yucca	treculeana	agavaceae	231.094	evergreen	1		E
zanthoxylum	americanum	rutaceae	985.574	deciduous	1		E
zanthoxylum	clava-herculis	rutaceae	364.735	evergreen	1		E
zanthoxylum	coriaceum	rutaceae	0.133	evergreen	1		E
zanthoxylum	fagara	rutaceae	574.417	evergreen	1		-
zanthoxylum	hirsutum	rutaceae	129.154	evergreen	1		E

## Appendix 2

### Description of the simplified framework of the three null models

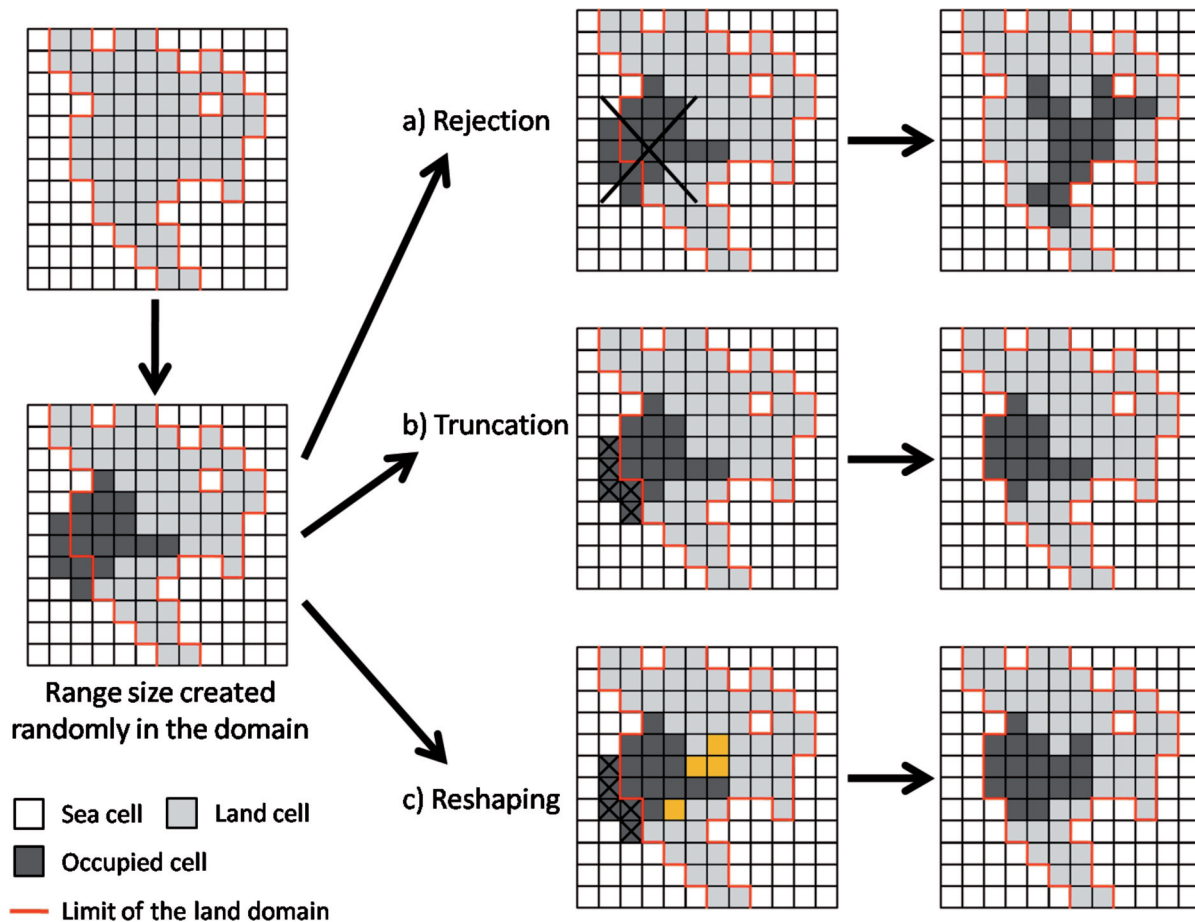


Figure A2-1. Description of the simplified framework of the three different kinds of null model used in this paper, adapted from Sandel and McKone (2006): a) rejection model, b) truncation model, and c) reshaping model (see the Methods section for details). The grid we used represents North America as shown in the figure, but comprises a greater number of cells ( $235 \times 140$ , i.e. 32 900 cells, with 13 359 land cells).

In the range rejection model, a species is removed if its growing range crosses the continental boundary into an oceanic cell; at the end of the simulation, only species with ranges falling completely within the continental boundaries remain. In the range reshaping model, if a growing range extends into an oceanic cell then the range is reshaped randomly to maintain its size but within the continental boundary. In the range truncation model, expanding ranges can occupy the entire grid of 32900 cells without constraint; at the end of the simulations, the range size of each species is the number of continental cells it occupies.

## References

Sandel, B. S. and McKone, M. J. 2006. Reconsidering null models of diversity: do geometric constraints on species ranges necessarily cause a mid-domain effect? – *Divers. Distrib.* 12: 467–474.

## Appendix 3

Comparison of range characteristics for species of North American trees and with the simulations from the three null models.

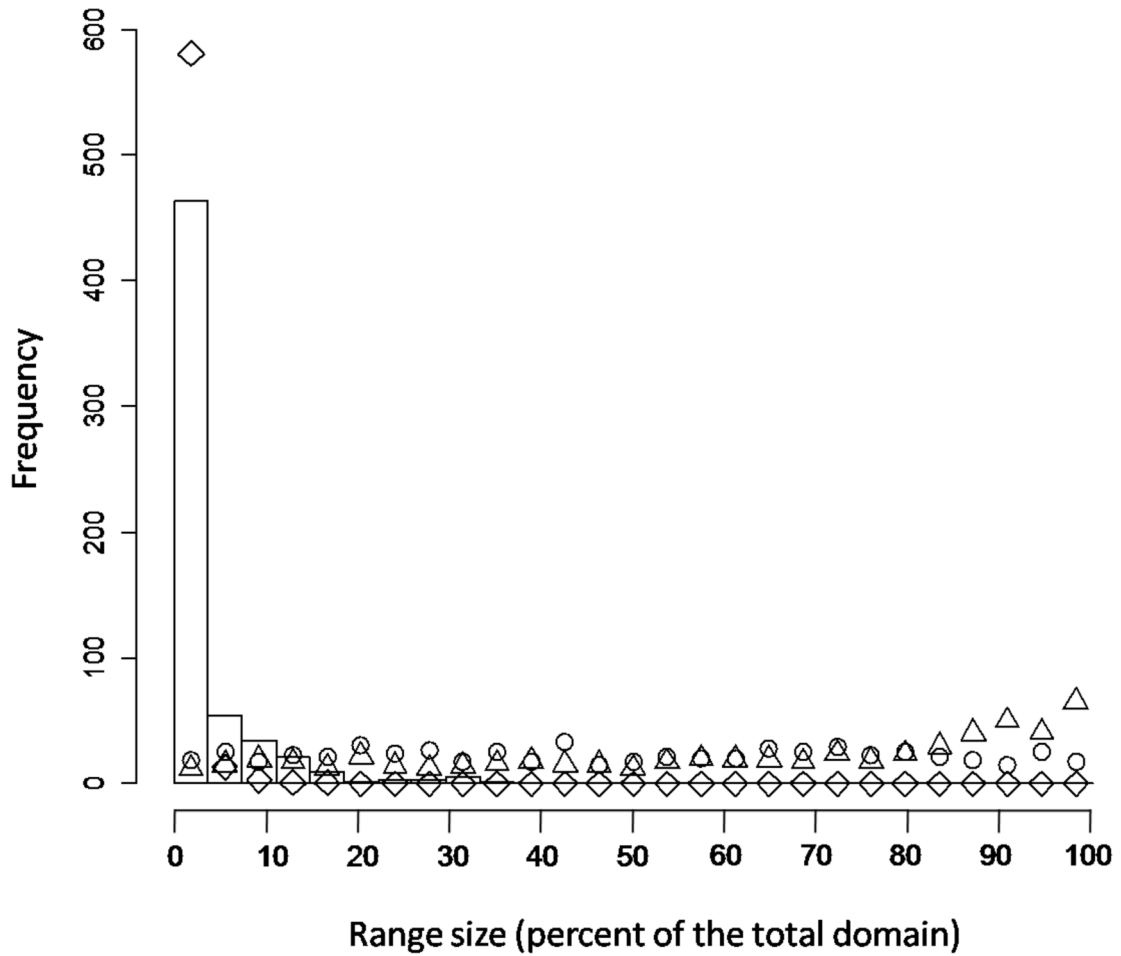


Figure A3-1. Species range area distribution for North American trees, and species range area distribution from the three null models. Real distribution is represented by the bars (range areas are calculated in percentage of the 13 359 cells in the continental grid). Diamonds: species range area distribution from the rejection model. Triangles: species range area distribution from the truncation model. Circles: species range area distribution from the reshaping model. Null distributions are averaged over 20 simulations.