

Supplementary Materials: Potential Population Genetic Consequences of Habitat Fragmentation in Central European Forest Trees and Associated Understorey Species—An Introductory Survey

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Supplementary Material 1 Reproductive system and ploidy of Central European tree species (including the Carpathians and the Carpathian basin) and observed population genetic differentiations. Data were collected for population genetic studies from the whole of Europe. Estimates of population genetic differentiation were taken from the literature. We accepted published F_{st} (including θ), G_{st} , and Φ values. These measures are known to give in most cases similar values (see Supplementary Material 2 for details). Alternative measures of population genetic differentiation (δ , D_j , d_o , R_{st} , Shannon-Weaver) were recalculated as F_{st} in case that allele frequency tables are provided by authors. Recalculated values carry the index “7”. Family affiliation according to APG [1]; <http://www.mobot.org/MOBOT/Research/APweb/>. The breeding system involves the distribution of sexes, the incompatibility system (SC = self-compatible; SI = self-incompatibility of unknown mechanism; pSI = postzygotic self-incompatibility system through expression of lethal alleles; gamSI = gametophytic SI), and the predominant mating system (X = outcrossed, S = selfed, M = mixed; F = facultative).

Genus/Species	Family Affiliation	Dispersal Ecology of Diaspores	Breeding System ¹	Ploidy and Chromosome Base Number x ²	Genetic Population Differentiation					
					<i>F</i> _{st} (%) ³	<i>N</i> Population s	Mean Number of Individuals Per Population (Range)	<i>N</i> Loci ⁴	Spatial Scale ⁵	References
wind-pollinated										
<i>Abies alba</i>	Pinaceae	anemochorous	monoecy, pSI, X	diploid, x = 12	4.9 ^{Iso} (δ)	24	52 (32–100)	16 (15 ^{Po}) ⁶	country (320)	[2]
					8.1 ^{Iso} (δ)	12	>20	10 (9 ^{Po}) ⁶	regional (450)	[3]
					2.9 ^{Iso,7}	21	27.8 (14–53)	9	regional (150)	[4]
					5.0 ^{Iso,7}	7 (11) ¹⁵	na (15–28)	19 (11 ^{Po})	country (800)	[5]
					7.3 ^{Iso,7}	6	130 (100–144)	4	country (500)	[6]
					5.8 ^{Iso,7}	35	114 (72–198)		country (450)	
					2.2 ^{Iso,7}	13	109.1 (78–198)	4	regional (230)	[7]
					2.1 ^{Iso,7}	8	129.5 (100–144)		regional (270)	
					2.3 ^{Iso,7}	6	102.3 (72–144)		regional (60)	
					n 39.8 ^{SSR} (δ)			3		
					2.9 ^{Iso} (δ)	3	51	16	regional (100)	[8,9]
					n 3.5 ^{SSR} (<i>R</i> _{st})			7		
					cp 3.5 ^{miniS}	33	36.3 (12–44)	2 ^{ha}	country (400)	[10]
					5.5 ^{Iso,7} (δ 4.4)	18	100	14	country (400)	[11]
					10.3 ^{Iso} (<i>Dj</i>)	84	c. 50	12 (11 ^{Po})	continental (1800)	[12]
					1.8 ^{Iso}	8	38.1 (29–50)	24 (21 ^{Po}) ⁶	regional (250)	[13]
					4.9 ^{Iso}	10	31.3	13	country (500)	[14]

					2.5 ^{Iso,7}	76	49.7	15	subcontinental (1300)	[15]
					1.5 ^{Iso}	5	29.8 (29–30)	15 (11 ^{Po})	regional (230)	[16]
					12.9 ^{Iso,7}	2	18.5 (17–20)	16 (8 ^{Po})	regional (10)	[17]
					n 0.9 ^{SNP}	37	32.0 (7–65)		subcontinental (1580)	
					n 0.9 ^{SNP}	5	21.8 (15–25)	249	regional (210)	[18]
					n 0.6 ^{SNP}	15	35.4 (23–65)		regional (400)	
					n 0.7 ^{SNP}	10	34 (18–65)		regional (210)	
					n 1.1 ^{SNP}	6	19.7 (7–25)		country (880)	
					8.8 ^{Iso} (G _{st})	10	27.1 (24–30)	15 (14 ^{Po})	country (1000)	[19]
					cp 18 ^{SSR} (Φ)	11	16.5 (11–24)	81 ^{ha}	regional (400)	[20]
					9.5 ^{Iso}	16	53.8 (44–64)	3	continental (1800)	[21]
					cp 13.3 ^{SSR} (G _{st})	17	42 (10–110)	90 ^{ha}	continental (2200)	[22]
<i>Alnus glutinosa</i>	Betulaceae	anemochorous	monoecy, gamSI, X	diploid, x = 14	2.2 ^{Iso}	3	60 (39–93)	16 (12 ^{Po})	regional (10)	[23]
					cp 88.6 ^{RFLP} (G _{st})	43	3.4 (3–5)	13 ^{ha}	continental (3400)	[24]
					cp 81 ^{RFLP} (G _{st})	25	9.4	12 ^{ha}	continental (3600)	[25]
					20.4 ^{Iso}	37	5	19	continental (1200)	[26]
<i>Alnus incana</i>	Betulaceae	anemochorous	monoecy, gamSI, X	diploid, x = 14						
<i>Betula pendula</i>	Betulaceae	anemochorous	monoecy, gamSI, X	diploid, x = 14	3.2 ^{Iso}	7	47.2 (37–57)	18 (13 ^{Po})	subcontinental (1400)	[27,28]
					cp 42.0 ^{RFLP} (G _{st})	47	9.2 (2–12)	13 ^{ha}	continental (4500)	[29]
					cp 38.3 ^{RFLP} (G _{st})	14	8	10 ^{ha}	continental (3600)	[30]
					cp 42.0 ^{RFLP} (G _{st})	23	9.3	9 ^{ha}	continental (3500)	[25]
<i>Betula pubescens</i>	Betulaceae	anemochorous	monoecy, SI, X	tetraploid, x = 14	cp 28.8 ^{RFLP} (G _{st})	20	8	6 ^{ha}	continental (3600)	[30]
<i>Carpinus betulus</i>	Betulaceae	anemochorous	monoecy	octoploid, x = 8	n 7.4 ^{AFLP}	20	10.1 (5–21)	117 ^{mo}	continental (2600)	
					n 4.7 ^{AFLP}	18	18.9 (8–30)	114 ^{mo}	country (220)	[31]
					cp 97.2 ^{RFLP} (G _{st})	36	7.6 (3–15)	na	continental (2500)	[32]
					cp 100 ^{RFLP} (G _{st})	18	9.6	4 ^{ha}	continental (2500)	[25]
<i>Carpinus orientalis</i>	Betulaceae	anemochorous	monoecy	diploid, x = 8	cp 97.2 ^{RFLP, SSR, seq} (G _{st})	5	9.4 (5–12)	8 ^{ha}	continental (850)	[32]
<i>Corylus colurna</i>	Betulaceae	endozoochorous	monoecy	diploid, x = 14						
<i>Fagus sylvatica</i>	Fagaceae	endozoochorous	monoecy, gamSI, X	diploid, x = 12	3.1 ^{Iso,7} (Dj) 5.8)	6	50	16	country (300)	[33]
					4.3 ^{Iso} (G _{st})	11	≥80	10 (8 ^{Po})	regional (190)	[34]
					1.0 ^{Iso,7} (d0 6.1)	2	50	16	regional (15)	[35]
					n 5.8 ^{SSR}	10	129.7 (90–286)	4	continental (1300)	[36]
					4.2 ^{Iso}	24			regional (500)	
					3.5 ^{Iso}	31	50	4	regional (350)	[37]
					5.0 ^{Iso}	18			regional (500)	
					4.6 ^{Iso}	30			regional (800)	

		5.4 ^{Iso}	99			continental (1600)	
		3.8 ^{Iso}	64			subcontinental (900)	[38] ^s
		7.1 ^{Iso}	35			subcontinental (700)	
		0.3 ^{Iso}	6			country (450)	
		3.3 ^{Iso}	30	50	6	country (450)	
		2.6 ^{Iso}	11			country (600)	
		4.6 ^{Iso}	33			regional (250)	
		5.8 ^{Iso}	10			country (850)	
		3.6 ^{Iso}	9			regional (100)	
		4.6 ^{Iso}	35	c. 50	6	regional (200)	[39]
		1.95 ^{Iso,7}	78	50	11	subcontinental (1400)	[40]
		5.9 ^{Iso}	389	47.4	15 (12 ^{po})	continental (2300)	[41]
		7.8 ^{Iso}	250	50	3	continental (2400)	[42]
		cp 83.0 ^{RFLP} (G _{st})	85	4.7 (5–20)	11 ^{ha}	continental (2700)	[43]
		3.25 ^{Iso}	48	50	12	country (900)	[44]
		2.0 ^{Iso,7}	20	50	12	country (700)	[45]
		1.3 ^{Iso}	11			regional (140)	
		1.4 ^{Iso}	4			regional (100)	
		0.7 ^{Iso}	7	c. 50	12	regional (220)	[46]
		1.3 ^{Iso}	22			regional (280)	
		3.0 ^{Iso}	139	≥50	12	subcontinental (1600)	[47]
		3.2 ^{Iso}	178	56.2 (45–86)	12	country (700)	[48]
		2.9 ^{Iso} (δ)	23	195.7 (101–200)	11	regional (180)	[49]
		cp 61.5 ^{RFLP}	40	5	13 ^{ha}	country (700)	[50]
		3.2 ^{Iso}	4			regional (100)	
		2.6 ^{Iso}	10			regional (160)	
		4.0 ^{Iso}	8	c. 50	11	regional (380)	[51]
		1.4 ^{Iso}	16			regional (350)	
		1.9 ^{Iso} (G _{st})	20	100.8 (68–118)	16 (12 ^{po}) ⁶	regional (400)	[52]
		4.6 ^{Iso}	21	103.5 (38–193)	10 (9 ^{po})	country (1100)	[53]
		4.6 ^{Iso}	27	30 (21–82)	11	regional (250)	[54]
		7.5 ^{Iso,7}	2	150 (136–164)	8	regional (10)	[55]
		1.6 ^{Iso}	5	172 (78–216)	16	country (420)	[56] ^s
		1.2 ^{Iso,18}	110 (9 regions)	50	12	continental (1500)	[57]
		cp 74.0 ^{RFLP} (G _{st})	23	9.4	6 ^{ha}	continental (2800)	[25]
		n 2.2 ^{SSR}	10	120.5 (100–200)	9	regional (620)	[58]
		2.4 ^{Iso} (δ 5.3)	20	102.9 (100–130)	11	regional (250)	[59]
		1.3 ^{Iso}	3	64.3 (24–99)	9	regional (50)	[60]
<i>Fraxinus angustifolia</i>	Oleaceae	anemochorous	diploid, x = 23	cp 91.3 ^{SSR} (G _{st})	70	6.11 (3–12)	13 ^{ha} continental (3300) [61]

					n 2.2 ^{SSR}	11	31.4 (29–39)	6	country (450)	[62]
					cp 94.0 ^{RFLP} (G _{st})	20	6.4	7 ^{ha}	na	Vendramin in [63]
<i>Fraxinus excelsior</i>	Oleaceae	anemochorous	trioecy, FX	diploid, x = 23	n 2.3 ^{SSR}	10	24	6	country (300)	[64]
					n 3.7 ^{SSR} (R _{st})	38	27.7 (4–40)	7	regional (360)	[65]
					cp 94.9 ^{SSR} (R _{st})			na		
					n 8.7 ^{SSR}	10	32.1 (20–37)	6	country (500)	[66]
					cp 89.0 ^{SSR} (G _{st})	201	6.4 (2–23)	12 ^{ha}	continental (3500)	[67]
<i>Juniperus communis</i>	Cupressaceae	endozoochorous	mostly dioecy, X	diploid, x = 11	12.0 ^{Iso}	35	34.3 (9–55)	10	continental (7200)	[68]
					41.0 ^{AFLP} (Φ)	23	13.4 (6–18)	216 (208 ^{po})	continental (2100)	[69]
					2.6 ^{Iso}	12	43.5 (25–59)	18 (17 ^{po})	regional (100)	[70]
					n 9.6 ^{SSR} (Φ)	19	16.3 (5–34)	3	country (450)	[71]
					cp 24.9 ^{SNP} (Φ)			6 ^{ha}		
<i>Juniperus thurifera</i>	Cupressaceae	endozoochorous	dioecy, X	tetraploid, x = 11	n 3.6 ^{SSR,12}	11	23.7 (20–30)	6	subcontinental (1400)	[72]
<i>Juglans regia</i>	Juglandaceae	zoochorous	monoecy, SC, M	diploid, x = 16	15 ^{Iso}	21	23.2 (na)	5	regional (70)	[73]
					n 5.4 ^{SSR} (θ)	29	15.7 (8–29)	10	country (1100)	[74]
<i>Larix decidua</i>	Pinaceae	anemochorous	monoecy, ± SI, X	diploid, x = 12	4.1 ^{Iso} (G _{st})	11	c. 100	18	country (900)	[75]
					5.1 ^{Iso} (G _{st})	7	na	7 (5 ^{po})	subcontinental (900)	[76]
					n 1.1 ^{SNP}	24	34.5 (1–65)		country (540)	
					n 1.7 ^{SNP}	5	17.8 (13–24)		regional (160)	
					n 0.7 ^{SNP}	15	40.5 (20–65)	267	regional (280)	[18]
					n 0.7 ^{SNP}	2	63.5 (63–64)		regional (25)	
					n 8.2 ^{SSR}	18	22.9 (20–24)	13	subcontinental (1500)	[77]
					n 8 ^{SSR}	45	22.8	13	subcontinental (1500)	[77]
					mt 52 ^{SNP} (G _{st})	43	8.4	22 ^{ha}		
<i>Ostrya carpinifolia</i>	Betulaceae	anemochorous	monoecy	diploid, x = 8						
<i>Picea abies</i>	Pinaceae	anemochorous	monoecy, pSI, X	diploid, x = 12	4.0 ^{Iso}	9	200	4	continental (2200)	[78] ^s
					4.9 ^{Iso} (δ)	10	>20	10	regional (450)	[3]
					1.2 ^{Iso}	29	100	17	country (420)	[79]
					7.8 ^{Iso}	9	na (<18–40)	21 (17 ^{po})	regional (450)	[80]
					mt 41.0 ^{miniS} (G _{st})	36	20	10 ^{ha}	regional (1000)	[81]
					5.2 ^{Iso} (G _{st})	70	40.9 (28–52)	22 (16 ^{po})	continental (4300)	[82] ^s
					2.0 ^{Iso}	11	62 (35–80)	4	country (1300)	[83] ^s
					3.0 ^{Iso}	4	58.8 (49–64)	12 (11 ^{po})	country (900)	[84] ^s
					n 5 ^{SSR}	6	31.2 (30–33)	7	regional (180)	[85]
					3.9 ^{Iso} (G _{st})	19	c. 32 (c. 18–40)	19 (17 ^{po})	country (500)	[86]
					4.3 ^{Iso} (δ)	20	100	18	regional (300)	[87]

					12.0 ^{Iso} (G_{st})	2	23.5 (22–25)	14	continental (2000)	[88]
					0.5 ^{Iso}	2	50.5 (50–51)	14	regional (2)	[89]
					0.9 ^{Iso}	11	63.2 (30–100)	12	country (400)	[90]
					mt 67.6 ^{miniS} (G_{st})	90	10.4 (4–16)	18 ^{ha}	continental (2800)	[91]
					2.5 ^{Iso}	19	c. 40	6	regional (120)	[92] ^s
					5.0 ^{Iso}	10	59.7 (18–107)	6	country (900)	[93] ^s
					mt 63.8 ^{miniS} (G_{st})	369	13.2 (4–30)	28 ^{ha}	continental (2800)	[94]
					n 2.9 ^{SSR}		46.4 (26–48)	7		
					mt 31.7 ^{miniS} (G_{st})	37	17.4 (13–30)	10 ^{ha}	continental (3000)	[95]
					n 0.2 ^{SSR}	3	150	6	regional (5)	[96]
					cp 10.0 ^{SSR} (R_{st})	97	11.4 (9–25)	41 ^{ha}	continental (2500)	[97]
<i>Pinus cembra</i>	Pinaceae	endozoochorous	monoecy, FX	diploid, x = 12	2.7 ^{Iso} (G_{st})	5	≥40	13	regional (150)	[98]
					4.0 ^{Iso}	5	na	30 (22 ^{po})	subcontinental (1200)	[99]
					cp 6.8 ^{SSR}	39	16	28 ^{ha}	country (280)	[100]
					cp 2.0 ^{SSR}	4	37 (10–57)	41 ^{ha}	country (450)	[101]
					n 5.5 ^{SSR}			6		
					cp 9.5 ^{SSR} (Φ)	11	15.9 (7–26)	33 ^{ha}	country (300)	[102]
					n 0.5 ^{SNP}	24	34.3 (18–65)		country (630)	
					n 0.3 ^{SNP}	5	25	459	regional (110)	
					n 0.3 ^{SNP}	4	24.5 (25–65)		regional (250)	[18]
					n 0.3 ^{SNP}	15	34.7 (18–65)		regional (100)	
					32.0 ^{Iso}	11	22.5	8	continental (7200)	[103] ^s
<i>Pinus halepensis</i>	Pinaceae	anemochorous	monoecy	diploid, x = 12	10.9 ^{Iso}	6	25	15 (4 ^{po})	country (800)	[104]
					cp 30.8 ^{SSR} (G_{st})	10	13 (9–16)	28 ^{ha}	continental (4000)	[105]
<i>Pinus mugo</i> agg. (incl. <i>Pinus uncinata</i> , <i>Pinus uliginosa</i>)	Pinaceae	anemochorous	monoecy, FX	diploid, x = 12	cp 8.3 ^{SSR}	12	31.6 (30–33)	168 ^{ha}	country (650)	[106]
					cp 7.21 ^{SSR} (G_{st})	13	29.6 (25–30)	174 ^{ha}	subcontinental (900)	[107]
					cp 7.0 ^{SSR} (G_{st})	29	27.1 (13–91)	100 ^{ha}	continental (1600)	[108]
					12.5 ^{Iso,7}	5	33.4 (15–47)	15 (13 ^{po})	continental (2100)	[109]
					n 0.2 ^{SNP}	27	31.4 (18–65)		country (650)	
					n 0.5 ^{SNP}	4	24.8 (22–26)	693	regional (140)	
					n 0.5 ^{SNP}	6	25.5 (22–61)		regional (310)	[18]
					n 0.3 ^{SNP}	16	32.0 (18–65)		regional (180)	
					6.9 ^{Iso,7}	8	25	11	regional (300)	[110]
					1 ^{Iso}	4	26	13	regional (na)	Schmidt 2000 in [111]
<i>Pinus nigra</i>	Pinaceae	anemochorous	monoecy, SI, ±SI	diploid, x = 12	9.8 ^{Iso}	40	4.1	4	continental (4000)	[112] ^s
					cp 3.37 ^{SSR}	9	36	68 ^{ha}	regional (250)	[113]

					13.5 ^{Iso}	28	53.4 (14–72)	4	continental (3600)	[114] ^s
					6.0 ^{Iso}	5	na (80–100) ²⁰	16 (15 ^{Po})	continental (1400)	[115]
<i>Pinus pinea</i>	Pinaceae	endozoochorous	monoecy	diploid, x = 12	27.9 ^{Iso}	17	34 (10–45)	31 (1 ^{Po})	continental (4000)	[116]
					cp 3.32 ^{SSR}	34	24	4 ^{ha}	continental (4000)	[117]
<i>Pinus sylvestris</i>	Pinaceae	anemochorous	monoecy, SC– pSI, X	diploid, x = 12	3.5 ^{Iso} (G _{st})	5	≥40	12	regional (100)	[98]
					n 5.8 ^{SSR}	21	21.3	9	country (500)	[118]
					2.3 ^{Iso}	18	32.5	21	continental (5000)	[119]
					1.0 ^{Iso}	3	c. 45	9	regional (1)	[120] ^s
					2.0 ^{Iso}	9	60 (40–121)	11	country (700)	[121] ^s
					2.0 ^{Iso}	4	250 (100–450)	10		
					n 2.0 ^{RFLP}	5	20.8 (17–23)	3		
					n 14 ^{RFLP}	4	24.3 (18–30)	13 ^{ph}	country (2200)	[122]
					n 1.4 ^{SSR}	2	23 (20–26)	2		
					n 33 ^{SSR} (Φ)	10	9.3 (4–13)	43 ^{Po}	country (400)	[123]
					5.9 ^{Iso,7}	3	24 (20–28)	15 (13 ^{Po})	continental (2000)	[109]
					7.6 ^{Iso}	6	c.25 (19–30)	8	country (600)	[124] ^s
					16.0 ^{Iso}	19	c. 30 (10–35)	3	continental (5000)	[125] ^s
					2.0 ^{Iso}	9	120	10	regional (250)	[126,127] ^s
					0.6 ^{Iso} (G _{st})	3	133.7 (133–134)	14	regional (280)	[128]
					cp 4.9 ^{SSR}	12	36	134 ^{ha}	regional (250)	[129]
					1.7 ^{Iso,7}	6	25	11	regional (280)	[110]
					cp 8.81 ^{SSR} (Φ _{st})	15	34.3 (17–48)	133 ^{ha}	continental (3000)	
					cp 3.24 ^{SSR} (Φ _{st})	15	47.1 (47–48)	174 ^{ha}	regional (200)	[130]
					7.0 ^{Iso} (G _{st})	13	21.0 (12–30)		subcontinental (2600)	
					7.6 ^{Iso} (G _{st})	7	21.9 (12–30)	8	subcontinental (2500)	[131]
					3.5 ^{Iso} (G _{st})	6	21.2 (12–30)		subcontinental (1600)	
					2.5 ^{Iso} (G _{st})	16	31.4 (29–51)	7	continental (2200)	
					4.0 ^{Iso} (G _{st})	7	74 (40–112)	7	country (700)	[132]
					3.3 ^{Iso} (G _{st})	7	74 (40–112)	11	country (700)	
					2.1 ^{Iso} (G _{st})	2	55.5 (40–71)		regional (120)	
					3.8 ^{Iso} (G _{st})	14	40.6 (18–62)	11	country (700)	[133]
					4.2 ^{Iso} (G _{st})	16	42.5 (18–71)		country (1000)	
					2.6 ^{Iso} (G _{st})	8	32 (20–75)	14 (12 ^{Po})	country (500)	[134]
					cp 3.1 ^{SSR} (Φ _{st})	13	24.8	139 ^{ha}	regional (350)	[135]
					3.0 ^{Iso}	3	104 (39–141)	3	country (1000)	[136] ^s
					cp 2.1 ^{SSR} (R _{st})	38	22.1 (14–24)	152 ^{ha}	continental (4300)	[137]
					mt 37–81.3 ^{RFLP}	38	≥30	4 ^{ha}	continental (4000)	[138]
					mt 84.5 ^{RFLP} (Φ _{st})	23	32.5 (15–47)	2 ^{ha}	continental (3000)	
					mt 59.6 ^{RFLP} (Φ _{st})	12	29.3 (27–30)		country (700)	[139]

					12.3 ^{iso} (Dj)	10	88	14	subcontinental (2500)	[140]
<i>Populus alba</i>	Salicaceae	anemochorous	dioecy, X	diploid, x = 19	cp 30.2 ^{RFLP,7} cp 45.1 ^{SSR,7}	3	5.3 (4–7)	2 ^{ha} 4 ^{ha}	regional (370)	[141]
					n 2.76–3.81 ^{SSR}	3 ¹⁶	51.3 (49–53)	5	country (500)	[142]
<i>Populus nigra</i>	Salicaceae	anemochorous	dioecy, X	diploid, x = 19	n 2.95 ^{SSR}	12	28.6 (26–31)	8	continental (1300)	[143]
					3.6 ^{iso}	na	na	8	country (500)	[144]
					n 8.1 ^{SSR} 26.8 ^{AFLP}	17	30	7 105 ^{po}	continental (2100)	[145]
<i>Populus tremula</i>	Salicaceae	anemochorous	dioecy, X	diploid, x = 19	cp 11.9 ^{RFLP} (G _{st}) cp 12.8 ^{SSR} (G _{st})	30	9 (3–12)	21 ^{ha} 15 ^{ha}	continental (4700)	[141]
					cp 11.0 ^{RFLP} (G _{st})	30	7.9	31 ^{ha}	na	Bittkau 2002 in [63]
					n 1.5 ^{SSR} n 1.6 ^{SNP}	12	9.7 (6–10)	18 50	country (1000)	[146]
					cp 11.0 ^{RFLP} (G _{st})	23	9.4	30 ^{ha}	continental (3600)	[25]
					n 55 ^{ISSR}	7	32	119 ^{mo} , 87 ^{po}	regional (270)	[147]
					n 51.3 ^{ISSR} (G _{st})	6	29	119 ^{mo} , 87 ^{po}	regional (235)	[148]
<i>Quercus cerris</i>	Fagaceae	endozoochorous	monoecy, SI, X	diploid, x = 12	10.7 ^{iso}	2	na	14 (7 ^{po})	regional (5)	[149]
<i>Quercus crenata</i>	Fagaceae	endozoochorous	monoecy	diploid, x = 12						
<i>Quercus frainetto</i>	Fagaceae	endozoochorous	monoecy	diploid, x = 12	cp 45.7 ^{RFLP} (G _{st})	23	4.77	9 ^{ha}	continental (900)	[150]
<i>Quercus ilex</i>	Fagaceae	endozoochorous	monoecy	diploid, x = 12	n 1.67 ^{AFLP}	68	9.3 (2–20)	215 ^{mo}	country (1000)	[151]
					18.6 ^{iso} Shannon-Weaver	30	36	5	continental (3000)	[152]
					10.2 ^{iso} (G _{st})	57	34.1 (15–59)	6 (5 ^{po}) ⁶	continental (3200)	[153]
					10.0 ^{iso} (G _{st})	22	34.7 (15–50)	8 (7 ^{po}) ⁶	continental (3000)	
					7.3 ^{iso}	16	51 (27–158)	3	continental (2000)	[154]
<i>Quercus petraea</i> (incl. <i>Q. dalechampii</i> , <i>Q. polycarpa</i>)	Fagaceae	endozoochorous	monoecy, SI, X	diploid, x = 12	n 2.3 ^{SSR} cp 50.35 ^{RFLP}	12	24.6 (10–40)	16 3 ^{ha}	regional (100)	[155]
					0.056 ^{iso,14} (d _o) cp 1.2 ^{RFLP}	12	100 ≥5	17 2 ^{ha}	regional (230)	[156]
					cp 71.3 ^{RFLP} (G _{st})	25	>3 (incl. <i>Qu. robur</i>)	2 ^{ha}	country (400)	[157]
					2.4 ^{iso} (G _{st})	32	120 ¹³	15 (11 ^{po})	country (950)	[158]
					2.4 ^{iso}	93	120	8	continental (2300)	[159]
					cp 80.2 ^{RFLP}	34	5	7 ^{ha}	country (400)	[160]
					n 0.8 ^{SSR} cp 50.1 ^{RFLP} (G _{st})	7	29.9 (25–33) 5.7	13 3 ^{ha}	country (400)	[161]
					3.6 ^{iso}	5	155 (72–228)	13	regional (300)	[56] ⁸
					cp 76.9 ^{SSR}	31	>3	12 ^{ha}	regional (250)	[162]

					n 4.9 ^{SSR}	3	48	20	subcontinental (1500)	[163]
					cp 83.5 ^{RFLP} (<i>G_{st}</i>)	650	4.23	17 ^{ha}	continental (3400)	[150]
					3.2 ^{Iso} (<i>G_{st}</i>)	7	122.1 (115–142)	13 (10 ^{Po})	continental (2300)	[111,164]
					cp 90.5 ^{RFLP}	58	8.1	3 ^{ha}	subcontinental (2000)	[165]
					13.5 ^{Iso}	8 ²¹	na	14 (8 ^{Po})	regional (120)	[149]
					cp 72.4 ^{RFLP} (<i>G_{st}</i>)	16	>3	7 ^{ha}	country (700)	[166]
					1.7 ^{Iso}	32	120	15	subcontinental (na)	Zanetto & Kremer in [167]
					2.5 ^{Iso} (<i>G_{st}</i>)	81	120	13 (8 ^{Po})	continental (2700)	[168]
<i>Quercus pubescens</i> (incl. <i>Q. virgiliana</i>)	Fagaceae	endozoochorous	monoecy	diploid, x = 12	cp 87.6 ^{RFLP} (<i>G_{st}</i>)	36	3.3 (1–6)	6 ^{ha}	country (770)	[169]
					3 ^{Iso} (<i>G_{st}</i>)	7	100	17	regional (200)	[156], cf. [111]
					cp 2.7 ^{RFLP}		≥5	2 ^{ha}		
					cp 86.9 ^{SSR}	6	>3	4 ^{ha}	regional (250)	[162]
					cp 85.4 ^{RFLP} (<i>G_{st}</i>)	331	4.37	13 ^{ha}	continental (1900)	[150]
					cp 76.9 ^{RFLP} (<i>G_{st}</i>)	11	7.36	3 ^{ha}	subcontinental (2000)	[165]
					13 ^{Iso}	3	na	14 (8 ^{Po})	regional (50)	[149]
					cp 83.0 ^{RFLP}	37	>3	6 ^{ha}	country (700)	[166]
<i>Quercus robur</i> (incl. <i>Q. pedunculiflora</i>)	Fagaceae	endozoochorous	monoecy, gamSI, X	diploid, x = 12	n 5.1 ^{SSR}	12	20	4	country (240)	[170]
					0.057 ^{Iso,14} (<i>d_o</i>)	6	100	17	regional (200)	[156]
					cp 1.9 ^{RFLP}		≥5	2 ^{ha}		
					cp 58.9 ^{SSR+RFLP} (<i>G_{st}</i>)	24	20	5 ^{ha}	regional (200)	[171]
					8.4 ^{Iso} (<i>δ</i>)	15	43.3	7	regional (250)	[172]
					cp 71.8 ^{RFLP} (<i>G_{st}</i>)	25	>3	2 ^{ha}	country (400)	[157]
					5.0 ^{Iso}	28	na (40–50)	12	country (na)	[173]
					6.6 ^{Iso}	33	48.1 (16–130)	13 (12 ^{Po})	regional (180)	[174,175]
					cp 75.4 ^{RFLP} (<i>G_{st}</i>)	27	5	7 ^{ha}	country (400)	[160]
					1.8 ^{Iso}	5	166 (96–208)	13	country (500)	[56] ⁸
					cp 48.6 ^{SSR}	53	>3	11 ^{ha}	regional (250)	[162]
					cp 71.7 ^{RFLP} (<i>G_{st}</i>)	41	>3	6 ^{ha}	country (700)	[162]
					n 3.9 ^{SSR}	3	48	20	subcontinental (1600)	[163]
					cp 103.4 ^{RFLP} (<i>G_{st}</i>)	984	4.29	23 ^{ha}	continental (5400)	[150]
					2.4 ^{Iso} (<i>G_{st}</i>)	7	115.4 (76–127)	13 (9 ^{Po})	continental (2000)	[111,164]
					cp 92.5 ^{RFLP} (<i>G_{st}</i>)	22	7.77	3 ^{ha}	subcontinental (2000)	[165]

					17.0 ^{Iso}	6 ¹⁹	na	14 (11 ^{Po})	regional (170)	[149]
					7.93 ^{AFLP}	12	25 (16–29)	100 (76 ^{Po}) 6	regional (200)	[176]
					cp 63.4 ^{RFLP} (G _{st})		25.2 (16–30)	4 ^{ha}		
<i>Taxus baccata</i>	Taxaceae	endozoochorous	dioecy, X	diploid, x = 12	19.7 ^{Iso,7} (δ 19.5)	6	38.8 (9–58)	6	regional (80)	[177]
					7.6 ^{Iso}	7	89 (40–122)	9	regional (230)	[178,179]
					n 15.5 ^{SSR}	51	18.1	7	continental (1600)	[180]
					4 ^{Iso}	8	7.3 (2–13)	7	regional (200)	[181]
					n 18.8 ^{SSR}	41	27.3 (9–40)	7	continental (4100)	[182]
					10.4 ^{Iso,7}	4	22.8 (12–33)	8	country (500)	[183]
					14.7 ^{Iso,7}	6	81.7 (46–114)	6	regional (250)	[184]
					16.6 ^{Iso}	10	46.1 (23–52)	13 (7 ^{Po})	regional (320)	[185]
insect-pollinated										
<i>Acer campestre</i>	Sapindaceae	anemochorous	hermaphrodis m, FS	diploid, x = 13	cp 79 ^{RFLP} (G _{st}) cp 59.4 ^{SSR} (G _{st})	18	10.3 (9–12)	12 ^{ha} 12 ^{ha}	continental (2400)	[141]
					cp 70 ^{RFLP} (G _{st})	18	10.2	19 ^{ha}	na	Bittkau 2002 in [63]
					n 27 ^{SSR} (δ)	12	30.1	6		
					n 5.7 ^{SSR,7}		c. 30	3	country (650)	[186]
					cp 71 ^{RFLP} (G _{st})	16	10.3	14 ^{ha}	continental (2400)	[25]
<i>Acer monspessulanum</i>	Sapindaceae	anemochorous	hermaphrodis m	diploid, x = 13	cp 87.3 ^{RFLP} (G _{st}) cp 68.1 ^{SSR} (G _{st})	9	8 (3–10)	6 ^{ha} 6 ^{ha}	continental (2300)	[141]
<i>Acer opalus</i> (incl. <i>A. obtusatum</i>)	Sapindaceae	anemochorous	hermaphrodis m	diploid, x = 13	cp 100 ^{RFLP,7} cp 28.5 ^{SSR,7}	5	3.4 (1–7)	3 ^{ha} 2 ^{ha}	country (550)	[141]
<i>Acer platanoides</i>	Sapindaceae	anemochorous	hermaphrodis m, gamSI, X	diploid, x = 13	cp 100 ^{SSR,7}	6	5.8 (1–10)	2 ^{ha}	continental (2500)	[141]
					9.9 ^{Iso}	12	38.0 (9–50)	11 (9 ^{Po})	subcontinental (2000)	[27,28]
					12 ^{Iso}	29	50.0 (4–102)	14 (9 ^{Po})	country (450)	[187]
<i>Acer pseudoplatanus</i>	Sapindaceae	anemochorous	hermaphrodis m, FS	tetraploid, x = 13	1.9 ^{Iso}	12	74.7 (53–78)	16	regional (200)	[188]
					cp 68.3 ^{RFLP} (G _{st}) cp 64.6 ^{SSR} (G _{st})	21	10.0 (6–13)	18 ^{ha} 6 ^{ha}	continental (2700)	[141]
					cp 67 ^{RFLP} (G _{st})	21	9.7	22 ^{ha}	na	Bittkau 2002 in [63]
					4.0 ^{Iso} (G _{st})	7	na	na	na	Konnert 2004 in [111]
					cp 66 ^{RFLP} (G _{st})	19	10.2	22 ^{ha}	continental (2800)	[25]
<i>Acer tataricum</i>	Sapindaceae	anemochorous	hermaphrodis m	diploid, x = 13						
<i>Arbutus unedo</i>	Ericaceae	endozoochorous	hermaphrodis m	diploid, x = 13	n 8.3 ^{AFLP}	19	24.5 (20–27)	125 ^{Po}	continental (3200)	[189]

<i>Cercis siliquastrum</i>	Fabaceae	autochorous (barochorous)	hermaphrodis m	diploid, x = 7						
<i>Fraxinus ornus</i>	Oleaceae	anemochorous	androdioecy, ±SC, FX	diploid, x = 23	cp 96.7 ^{SSR} (G _{st})	59	6.2 (4–11)	4 ^{ha}	continental (2500)	[61]
<i>Malus sylvestris</i> (incl. <i>M.</i> <i>dasyphylla</i>)	Rosaceae	endozoochorous	hermaphrodis m, gamSI, X	diploid, x = 17	n 6.0 ^{SSR}	5	14.6 (6–28)	12	country (500)	[190]
					4.6 ^{AFLP}	4	18 (6–28)	139 (126 ^{Po}) ⁶		
					n 10.0 ^{SSR}	37	10.3 (1–100)	26	continental (3400)	[191]
<i>Prunus avium</i>	Rosaceae	endozoochorous	hermaphrodis m, gamSI, X	diploid, x = 8	n 4.6 ^{SSR}	11	25.3 (14–39)	8	country (500)	[192]
					4.9 ^{Iso}	4	43.8 (14–81)	10	country (600)	[193]
					n 5.3 ^{SSR}	4	32.8 (31–36)	10	country (170)	[194]
					1.4 ^{Iso}	2	69.5 (47–92)	14 (8 ^{Po})	regional (na)	[195]
					5.2 ^{Iso}	6	35.2 (15–92)		country (500)	
					cp 29 ^{RFLP}	23	9.2 (3–15)	16 ^{ha}	continental (2300)	[196]
					cp 29.0 ^{RFLP} (G _{st})	23	9.2	16 ^{ha}	continental (2800)	[25]
<i>Prunus mahaleb</i>	Rosaceae	endozoochorous	hermaphrodis m	diploid, x = 8	n 19.35 ^{RAPD}	7	20.6 (11–32)	73 ^{Po}	regional (15)	[197]
<i>Prunus padus</i>	Rosaceae	endozoochorous	hermaphrodis m	tetraploid, x = 8						
<i>Pyrus communis</i> (incl. <i>P. pyrastrer</i>)	Rosaceae	endozoochorous	hermaphrodis m, gamSI, X	diploid, x = 17	n 4 ^{SSR} (Φ)	6	32.0 (29–36)	17	country (500)	[198]
<i>Pyrus nivalis</i> (incl. <i>P. austriaca</i>)	Rosaceae	endozoochorous	hermaphrodis m	diploid, x = 17						
<i>Sorbus aria</i> group ⁹	Rosaceae	endozoochorous	hermaphrodis m	di-, tri- and tetraploid, x = 17	cp 25 ^{RFLP} (G _{st})	10	5.9	25 ^{ha}	na	Musch in [63]
<i>Sorbus aucuparia</i>	Rosaceae	endozoochorous	hermaphrodis m, gamSI, X	diploid, x = 17	cp 28.6 ^{RFLP}	6	25.0 (30–50)	12 ^{ha}	subcontinental (1000)	[199]
					6 ^{Iso} (G _{st})	17	37.9 (25–41)	9	country (500)	[200]
					4.3 ^{Iso} (θ)	8	13.1 (2–26)	6	regional (4)	[201]
					cp 13.1 ^{RFLP} (θ)		14.9 (2–23)	4 ^{ha}		
<i>Sorbus domestica</i>	Rosaceae	endozoochorous	hermaphrodis m, SC, M	diploid, x = 17	n 13.8 ^{SSR,17}	13	22.1 (11–45)	7	continental (3600)	[202]
					n 29.2 ^{SSR,7,17}	6	5.2 (2–14)	7	regional (220)	[203]
<i>Sorbus latifolia</i> group ¹⁰	Rosaceae	endozoochorous	hermaphrodis m	di-, tri- and tetraploid, x = 17						
<i>Sorbus intermedia</i> group ¹¹	Rosaceae	endozoochorous	hermaphrodis m	di-, tri- and tetraploid, x = 17						
<i>Sorbus torminalis</i>	Rosaceae	endozoochorous	hermaphrodis m	di- and tetraploid, x = 17	n 10.7 ^{ISSR} (Φ _{st})	26	22 (11–24) 8	54 ^{Po} 10 ^{ha}	regional (280)	[204]
					cp 37.0 ^{RFLP} (Φ _{st})					
					15 ^{Iso}	67	17.7 (11–26)	15 (9 ^{Po})	country (900)	[205]
					15 ^{Iso}	73	20 (11–86)	15	continental (2500)	
					6.7 ^{Iso,17}	10	70.8 (13–143)	6	regional (100)	[206]
					n 22.8 ^{SSR}	14	20.2 (9–41)	7	continental (2700)	[207]

					cp 34 ^{RFLP}	55	16 (10–31)	25 ^{ha}	country (900)	[208]
					cp 33 ^{RFLP} (G _{st})	17	8.7	26 ^{ha}	continental (2400)	[25]
mixed										
<i>Castanea sativa</i>	Fagaceae	endozoochorous	monoecy, SC–SI, X	diploid, x = 12	cp 43 ^{RFLP}	38	4.8 (3–5)	11 ^{ha}	continental (4200)	[209]
					15 ^{Iso}	17	30.1 (27–37)	13 (11 ^{Po})	country (900)	[210]
					2.7 ^{Iso}	5	49.6 (15–117)	10	country (600)	[193]
					n 14.5 ^{SSR}	16	14.9 (11–21)	6	country (950)	[211]
					10.0 ^{Iso}	18	15.9 (10–24)	15 (10 ^{Po})	country (800)	[212,213]
					8.7 ^{Iso}	15			country (900)	
					4.5 ^{Iso}	6	na (20–60)	13 (7 ^{Po}) ⁶	regional (80)	[214]
					8.8 ^{Iso}	7			regional (50)	
					0.8 ^{Iso}	2			regional (80)	
<i>Celtis australis</i>	Ulmaceae	endozoochorous	andromonoecy	di- and tetraploid, x = 10						
<i>Salix alba</i>	Salicaceae	anemochorous	dioecy, X	tetraploid, x = 19						
<i>Salix caprea</i>	Salicaceae	anemochorous	dioecy, X	diploid, x = 19	cp 9.0 ^{RFLP} (G _{st})	24	10 (8–13)	28 ^{ha}	continental (2400)	[29]
					cp 1.7 ^{SSR} (G _{st})	5	10 (8–10)	8 ^{ha}		
					n 7 ^{SSR} (G _{st})			6	regional (230)	[215]
					cp 38 ^{SSR} (G _{st})	21	8.7 (7–23)	79 ^{ha}		
					cp 9 ^{RFLP} (G _{st})	25	10	29 ^{ha}	continental (3600)	[25]
<i>Salix daphnoides</i>	Salicaceae	anemochorous	dioecy, X	diploid, x = 19						
<i>Salix eleagnos</i>	Salicaceae	anemochorous	dioecy, X	diploid, x = 19						
<i>Salix euxina</i> (incl. <i>S. fragilis</i>)	Salicaceae	anemochorous	dioecy, X	tetraploid, x = 19						
<i>Salix pentandra</i>	Salicaceae	anemochorous	dioecy, X	tetraploid, x = 19						
					n 11.9 ^{SSR}	38	1.9		continental (6700)	
					n 9.7 ^{SSR}	c. 54	c. 2.9		continental (6300)	
					n 11.2 ^{SSR}	na	na		continental (5600)	
<i>Salix viminalis</i>	Salicaceae	anemochorous	dioecy, X	diploid, x = 19	n 6.0 ^{SSR}	c. 64	c. 2.9	33	subcontinental (1800)	[216]
					n 4.9 ^{SSR}	na	na		subcontinental (1750)	
					n 4.0 ^{SSR}	na	na		subcontinental (1650)	
					n 4.1 ^{Iso}	14	12.2 (5–158)	15 (6 ^{Po})	subcontinental (1100)	[217]
					n 5.0 ^{SSR}	6	12.8 (5–22)	38	regional (270)	[218]
<i>Tilia cordata</i>	Malvaceae	anemochorous	hermaphroditism, SI, FX	diploid, x = 41	cp 55.2 ^{RFLP} (G _{st})	17	7.6 (2–10)	14 ^{ha}	continental (2400)	[219]
					n 7.8 ^{SSR}	16	15.4 (5–31)	13	regional (500)	[220]
					cp 57 ^{RFLP} (G _{st})	16	7.6	16 ^{ha}	continental (3000)	[25]

<i>Tilia platyphyllos</i>	Malvaceae	anemochorous	hermaphrodis m, SI, FX	diploid, x = 41	cp 41.0 ^{RFLP} (G_{st})	9	5.6	13 ^{ha}	na	Fineschi unpubl. in [63]
					n 10.3 ^{SSR}	8	14.5 (8–26)	13	regional (500)	[220]
<i>Tilia tomentosa</i>	Malvaceae	anemochorous	hermaphrodis m	diploid, x = 41						
<i>Ulmus glabra</i>	Ulmaceae	anemochorous	hermaphrodis m, SC–SI, M	diploid, x = 14	cp 61.0 ^{RFLP} (G_{st})	20	7.0	28 ^{ha}	na	Musch unpubl. in [63]
<i>Ulmus laevis</i>	Ulmaceae	anemochorous	hermaphrodis m, SI, X	diploid, x = 14	33 ^{iso}	12	na (40–50)	18	country (na)	[173]
<i>Ulmus minor</i> (incl. <i>U. procera</i>)	Ulmaceae	anemochorous	hermaphrodis m, SC, FX	diploid, x = 14	cp 47.0 ^{RFLP} (G_{st})	29	6.1	32 ^{ha}	continental (na)	[25,63]
					17.9 ^{iso}	5	33 (19–58)	3	country (c. 500)	[221]

¹ data from Klotz et al. [222] and <http://forest.jrc.ec.europa.eu/european-atlas-of-forest-tree-species/>; ² generative sporophytic ploidy = the number of chromosome sets with base number x carried by the nuclei of the sporophyte; secondary source: Chromosome Counts Database (CCDB)—<http://ccdb.tau.ac.il/home/>; ³ Unless stated otherwise measures are F_{st} values. Indices signify the type of marker system used: ^{AFLP} Amplified Fragment Length Polymorphism, ^{iso} Isoenzyme, ^{ISSR} Interspersed simple sequence repeats, ^{miniS} Mini-satellites, ^{RFLP} DNA restriction fragment length polymorphism, ^{SNP} single nucleotide polymorphism, ^{SSR} Microsatellites; cp = chloroplast marker, mt = mitochondrial marker, n = nuclear marker; ⁴ ha = haplotype, mo = inclusively of monomorphic loci, ph = molecular phenotype, po = polymorphic loci; ⁵ the (approximate) extent of the study area in kilometers is provided in parentheses; ⁶ differentiation measure calculated including monomorphic loci; ⁷ F_{st} was calculated from the original data for which no or Gregorius' differentiation measures d_0 , δ_T or δ [223–224] are provided; ⁸ used secondary literature: [167]; ⁹ the group comprises of sexual and apomictic microspecies [226,227]; ¹⁰ the group comprises of mostly facultative apomictic microspecies [226,227] of hybrid origin (*S. aria* group × *S. torminalis*); ¹¹ the group comprises of sexual and facultative apomictic microspecies [227] of hybrid origin (*S. aria* group × *S. aucuparia*); ¹² percent variation within two regions representing the distribution areas of subsp. *africana* and subsp. *thurifera*, respectively; ¹³ seeds collected from 30 to 50 points; ¹⁴ d_0 = average genetic distance [223,228]; ¹⁵ for seven populations only the exact samples size is provided; ¹⁶ populations introgressed by *Populus tremula*; ¹⁷ calculated based on the number of unique genotypes; ¹⁸ differentiation among regions; ¹⁹ some populations introgressed by *Qu. Petraea*; ²⁰ haploid endosperms; ²¹ some populations introgressed by *Qu. robur* and *Qu. pubescens*.

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