# Stand data (before intervention): Bosco-Fontana

Integrate+

Site conditions

Altitude: 25 m.a.s.l.
Forest ecological region:
Lombardia
Geology / Bedrock: Medium
floodplain
Soil type: Haplic luvisols and
mollic gleysols
Natural forest community: Illyrian
oak-hornbeam forests
(Erythronio-Carpinion)
Mean annual temperature: 13.1 C;
Mean annual precipitation: 603
mm; Ownership: Carabinieri
Corps; Establishment: 2020

Tree species distribution by volume (in %)
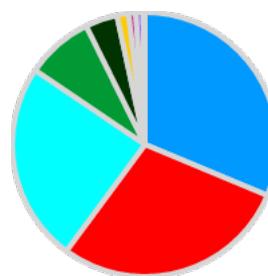
- narrow-leafed ash: 31.3 %
- pedunculate oak: 28.8 %
- hornbeam: 24.4 %
- alder: 8.2 %
- Field elm: 3.9 %
- wild cherry: 1.4 %
- field maple: 0.9 %
- black locust: 0.9 %
- London sycamore: 0.2 %

DBH distribution of the stand
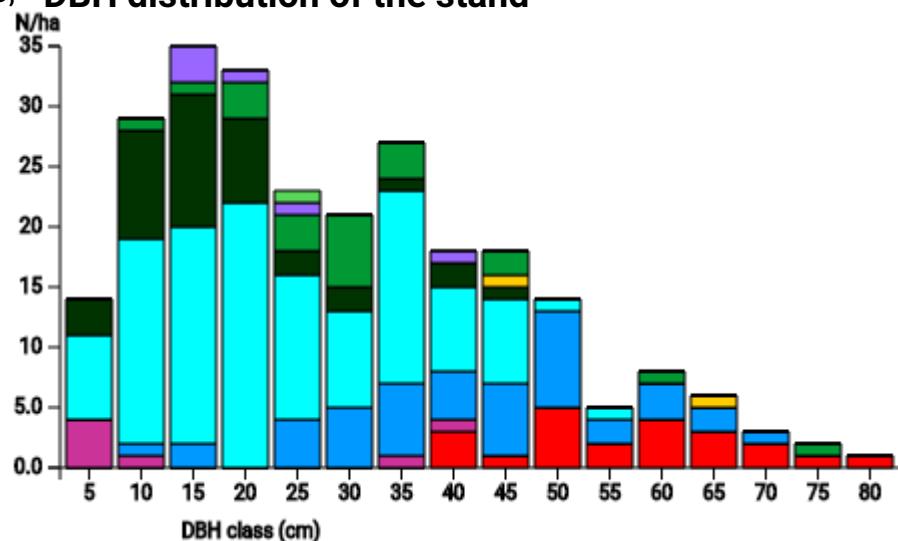
Initial stand (details by tree species)

| Tree species	N/ha	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Microhabitats (N)
Field elm	38	1.5	13.5	1276	756	49
London sycamore	1	0.1	0.7	70	24	1
alder	21	2.2	28.2	2852	411	31
black locust	6	0.3	3	296	71	9
field maple	7	0.3	3	304	187	10
hornbeam	116	7.3	84.2	8312	3230	278
narrow-leafed ash	44	7.2	107.8	10961	1083	81
pedunculate oak	22	6.3	99.3	9868	557	49
wild cherry	2	0.5	4.7	473	127	7
Total	257	25.7	344.3	34412	6446	515

Removed trees

Volume: 55.5 m³
Basal area: 4.2 m²
Economic value: 5608 €
Habitat value: 649 pts.

Removed trees (N in %)

- hornbeam: 38.1 %
- narrow-leafed ash: 16.7 %
- Field elm: 16.7 %
- alder: 11.9 %
- pedunculate oak: 9.5 %
- field maple: 2.4 %
- black locust: 2.4 %
- London sycamore: 2.4 %
- wild cherry: 0 %
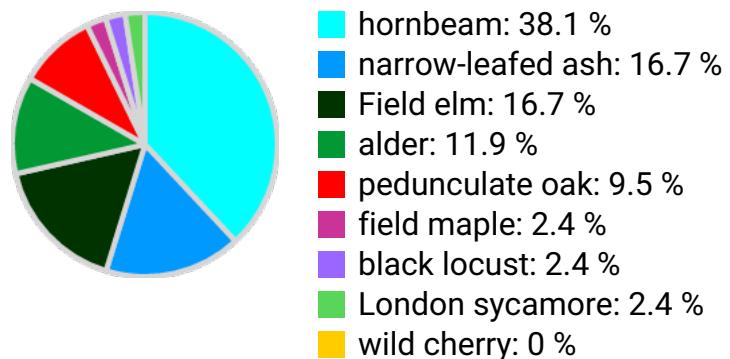
DBH distribution of removed trees
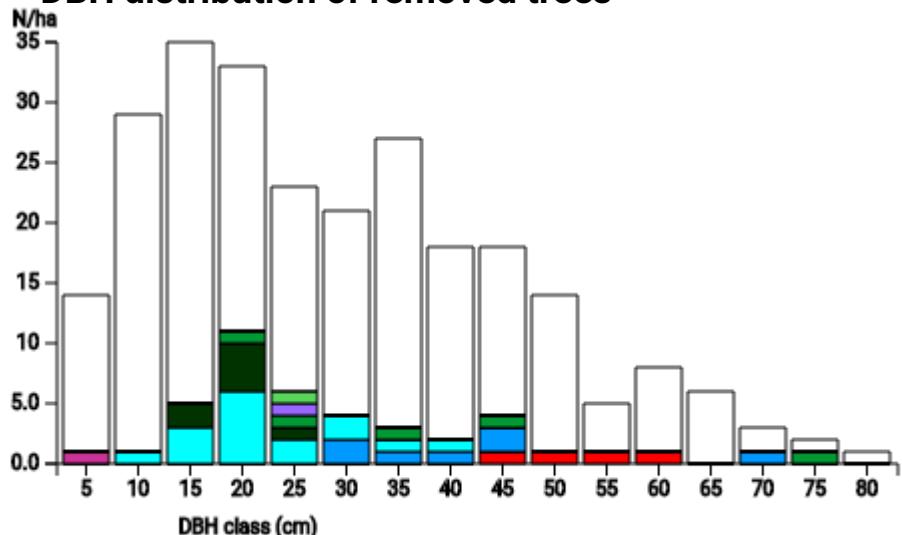
Removed trees (details by tree species)

Tree species	N/ha	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Microhabitats (N)
Field elm	7	0.3	2.1	208	86	6
London sycamore	1	0.1	0.7	70	24	1
alder	5	0.8	11.2	1130	114	9
black locust	1	0.1	0.8	78	4	1
field maple	1	0	0	3	0	0
hornbeam	16	0.9	9.1	911	270	27
narrow-leafed ash	7	1.2	17.8	1804	93	8
pedunculate oak	4	0.9	13.8	1405	58	8
wild cherry	0	0	0	0	0	0
Total	42	4.2	55.5	5608	649	60

Economic value [EUR]
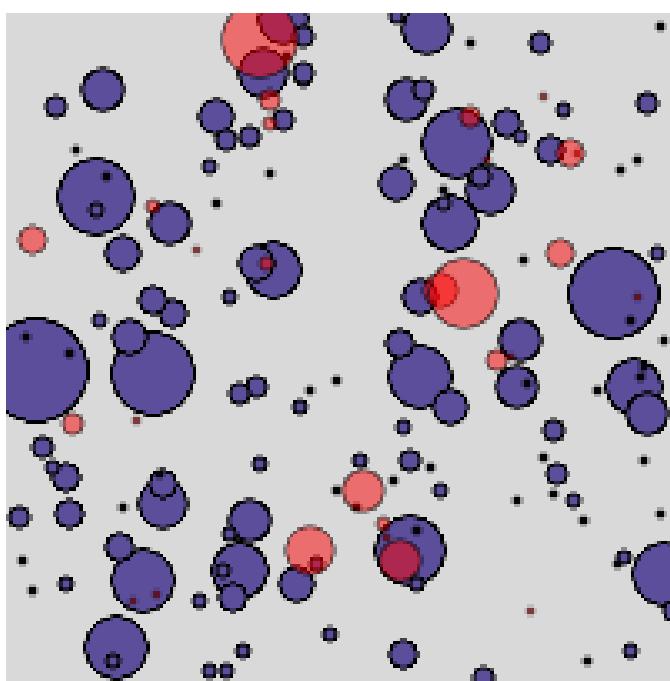
Habitat value
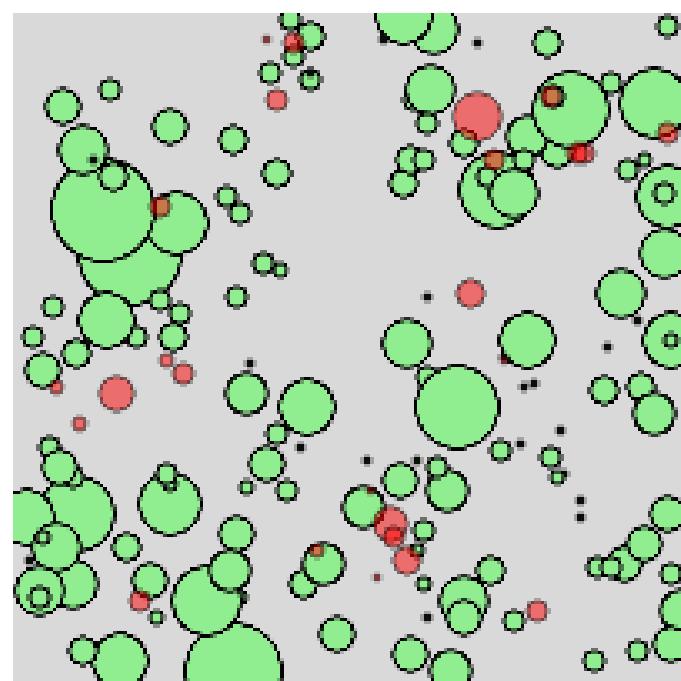
Basal area [m²]
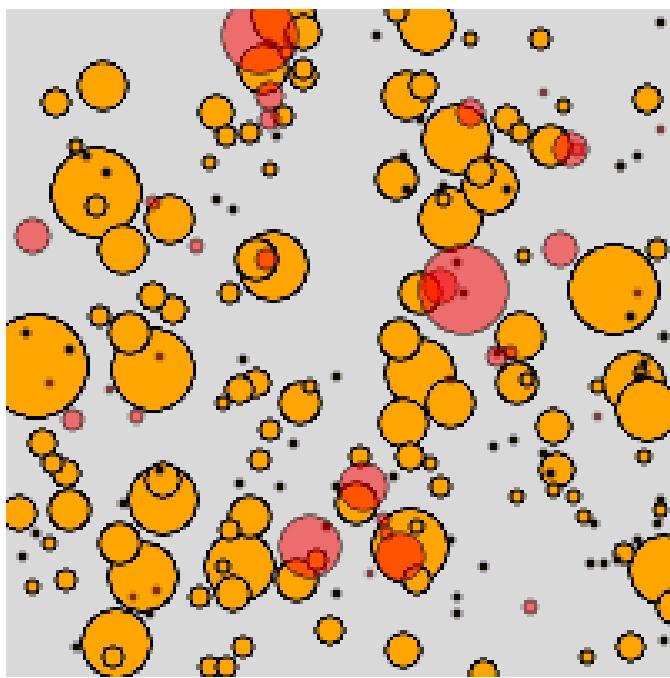
Volume [m³]
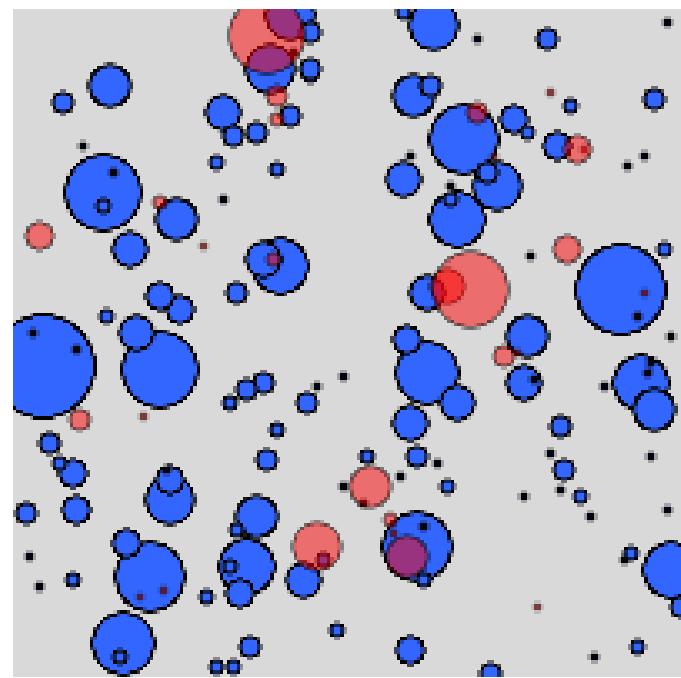
Description:

Red circles (removed trees); circle size according to numerical values (e.g. large circles mean high values); trees with very low values (e.g. habitat value "0") are not visible.

Economic values

Total value of removed trees: 5608 €
Percentage of total stand value: 16.3 %
Stand value after harvest: 28804 €

Economic value by tree species [€]

Tree species	Total	Per m³
pedunculate oak	1405	102
field maple	3	100
narrow-leafed ash	1804	101
hornbeam	911	100
Field elm	208	101
wild cherry	0	0
alder	1130	101
black locust	78	100
London sycamore	70	100
Total	5608	101

Wood quality distribution (m³ in %)

- A
- B
- C
- IT
- F
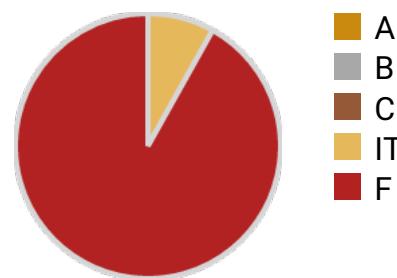
Quality class	m³	%
A	0	0
B	0	0
C	0	0
Industrial Timber	4.5	8.1
Fuelwood	51	91.9

Habitat values

Total habitat value of removed trees: 649 pts.
Percentage of total stand value: 10.1 %
Stand value after harvest: 5797 pts.

Habitat value by tree species [pts.]

Tree species	Total	Per m³	Microhabitats [N]
pedunculate oak	58	4.2	8
field maple	0	0	0
narrow-leafed ash	93	5.2	8
hornbeam	270	29.7	27
Field elm	86	41.6	6
wild cherry	0	0	0
alder	114	10.2	9
black locust	4	5.1	1
London sycamore	24	34.3	1
Total	649	11.7	60

Habitat value (points) of removed trees by species (in %)
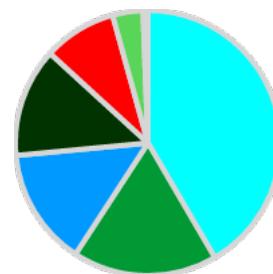
- hornbeam (41.6 %)
- alder (17.6 %)
- narrow-leafed ash (14.3 %)
- Field elm (13.3 %)
- pedunculate oak (8.9 %)
- London sycamore (3.7 %)
- black locust (0.6 %)
- field maple (0 %)
- wild cherry (0 %)

Remaining stand

Volume: 289 m³
Basal area: 21.7 m²
Economic value: 28804 €
Habitat value: 5797 pts.

Remaining trees by volume (m³ in %)
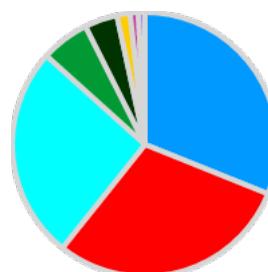
- narrow-leafed ash: 31.1 %
- pedunculate oak: 29.6 %
- hornbeam: 26 %
- alder: 5.9 %
- Field elm: 4 %
- wild cherry: 1.6 %
- field maple: 1 %
- black locust: 0.8 %
- London sycamore: 0 %

DBH distribution after removal
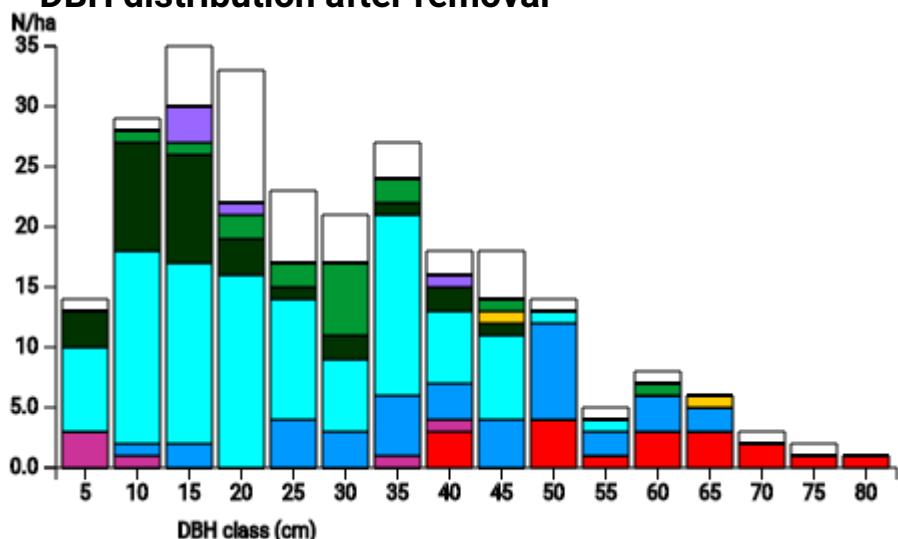
Remaining stand (details by tree species)

| Tree species	N/ha	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Microhabitats (N)
Field elm	31	1.3	11.4	1068	670	43
London sycamore	0	0	0	0	0	0
alder	16	1.4	17	1722	297	22
black locust	5	0.2	2.2	218	67	8
field maple	6	0.3	3	301	187	10
hornbeam	100	6.4	75.1	7401	2960	251
narrow-leafed ash	37	6.1	90	9158	990	73
pedunculate oak	18	5.3	85.5	8464	499	41
wild cherry	2	0.5	4.7	473	127	7
Total	215	21.5	288.8	28804	5797	455

Retention trees

Volume: 105.3 m³
Elite trees: 0
Habitat trees: 13
Economic value: 10622 €
Habitat value: 1769 pts.

Retention trees by volume (m³ in %)

- ■ narrow-leafed ash: 39.3 %
- ■ pedunculate oak: 28 %
- ■ hornbeam: 16 %
- ■ alder: 7.3 %
- ■ wild cherry: 4.5 %
- ■ Field elm: 3.4 %
- ■ field maple: 1.5 %
- ■ black locust: 0 %
- ■ London sycamore: 0 %
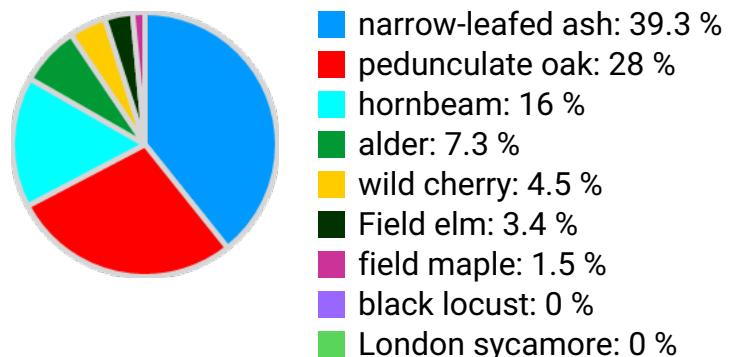
DBH distribution of retention trees
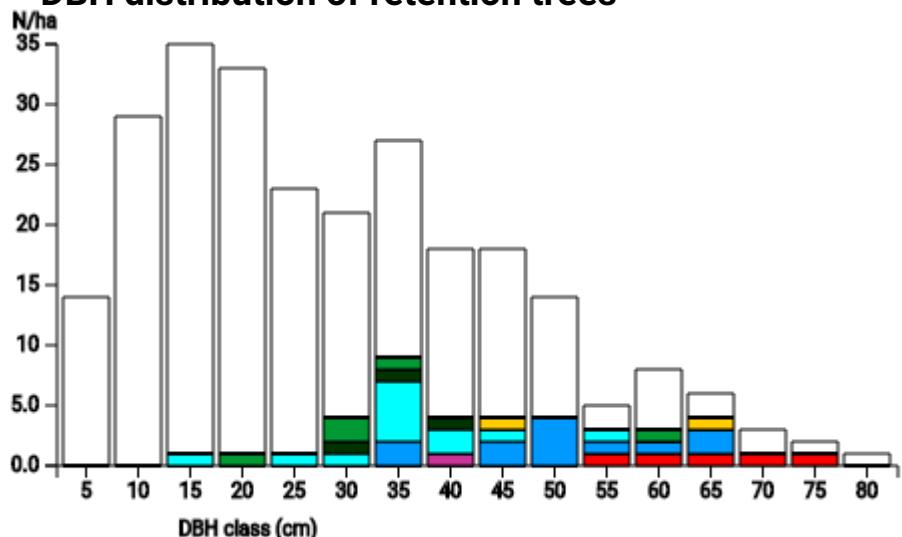
Retained trees (details by tree species)

Tree species	N/ha	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Microhabitats (N)
Field elm	3	0.3	3.6	281	62	6
London sycamore	0	0	0	0	0	0
alder	5	0.6	7.7	778	169	12
black locust	0	0	0	0	0	0
field maple	1	0.1	1.6	161	92	4
hornbeam	12	1.4	16.8	1684	625	44
narrow-leafed ash	12	2.7	41.4	4213	451	32
pedunculate oak	5	1.8	29.5	3032	243	14
wild cherry	2	0.5	4.7	473	127	7
Total	40	7.4	105.3	10622	1769	119

Number of habitat trees	[N]	13
Habitat value	pts.	860
	[% of total]	13.3
Economic value	[€]	2215
	[% of total]	6.4
Number of microhabitats	[N]	46
	[% of total]	8.9

Habitat tree distribution by species (N in %)

- narrow-leafed ash: 30.8 %
- hornbeam: 30.8 %
- wild cherry: 15.4 %
- alder: 15.4 %
- pedunculate oak: 7.7 %
- field maple: 0 %
- Field elm: 0 %
- black locust: 0 %
- London sycamore: 0 %
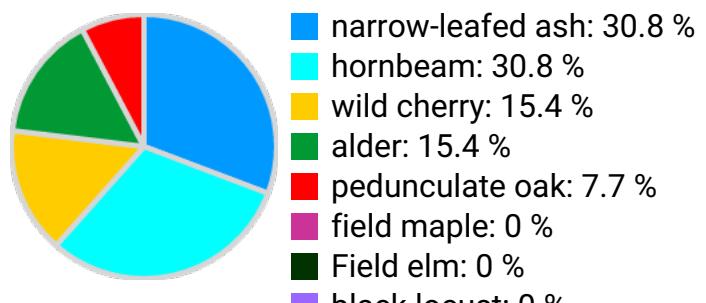
Spatial distribution of habitat trees
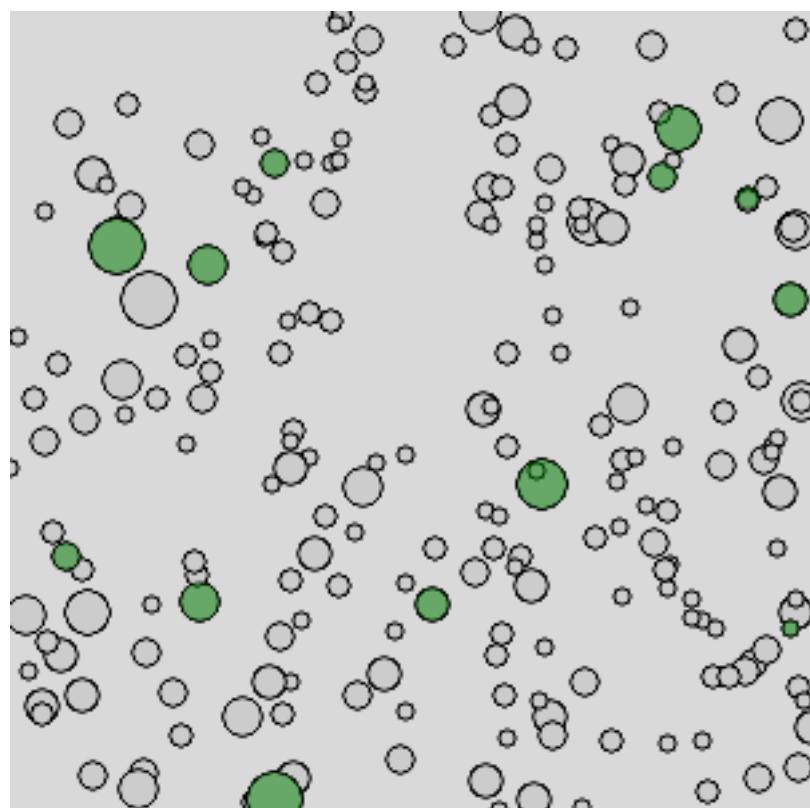
Reasons for removal
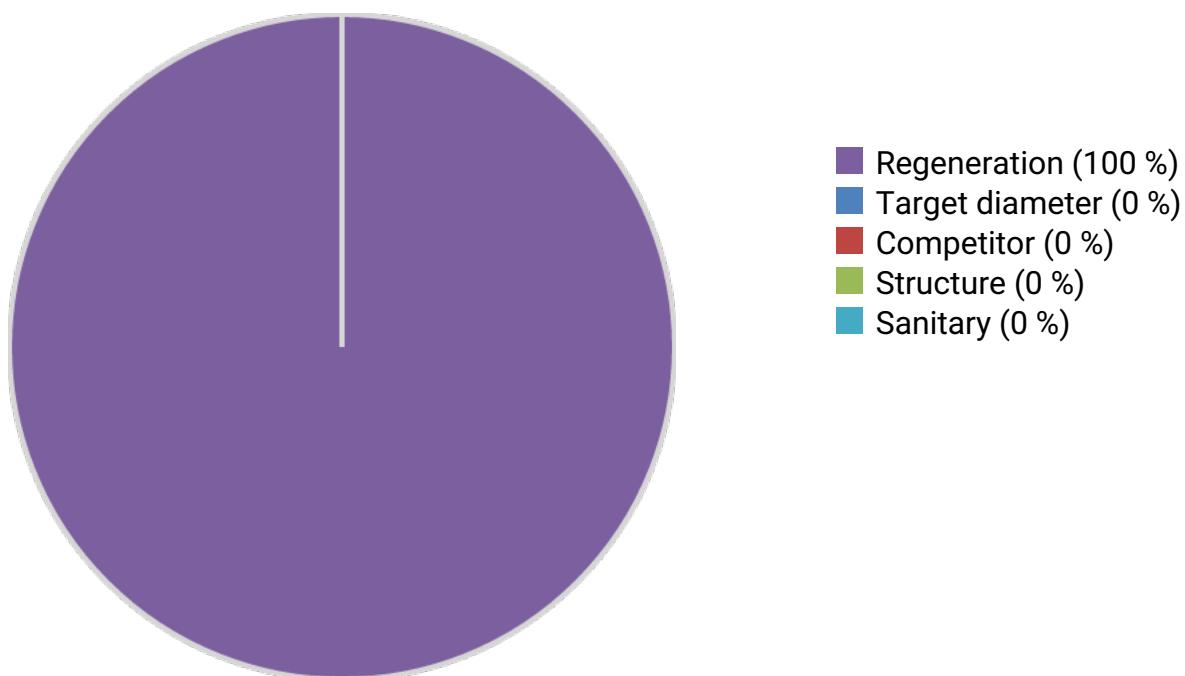
- ■ Regeneration (100 %)
- ■ Target diameter (0 %)
- ■ Competitor (0 %)
- ■ Structure (0 %)
- ■ Sanitary (0 %)

Reasons for retention
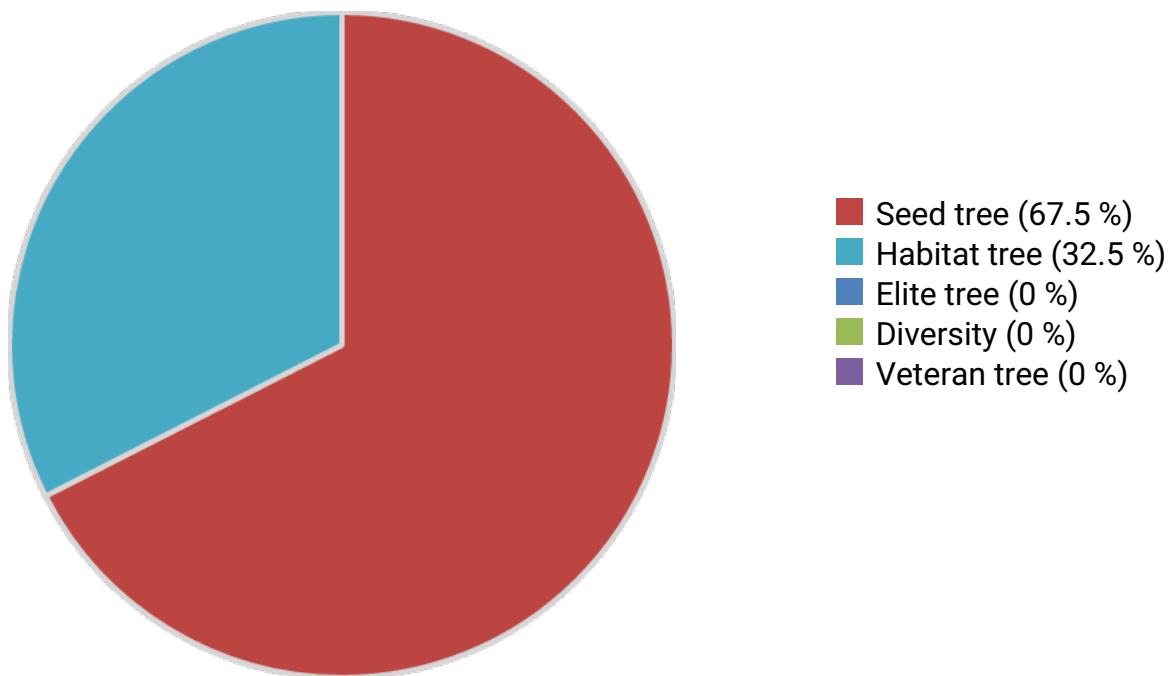
- ■ Seed tree (67.5 %)
- ■ Habitat tree (32.5 %)
- ■ Elite tree (0 %)
- ■ Diversity (0 %)
- ■ Veteran tree (0 %)

Distribution of tree microhabitats by code (N total)
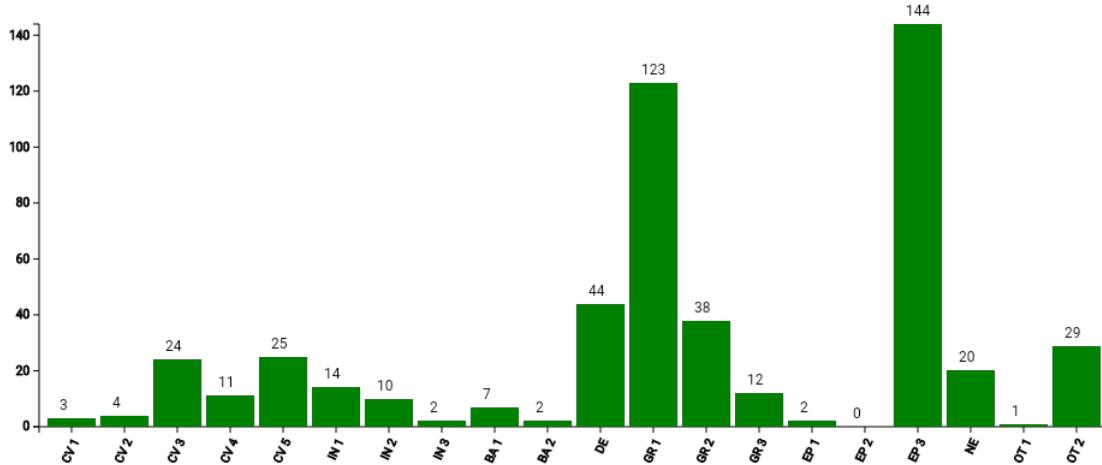
Removed tree microhabitats by code (N removed)
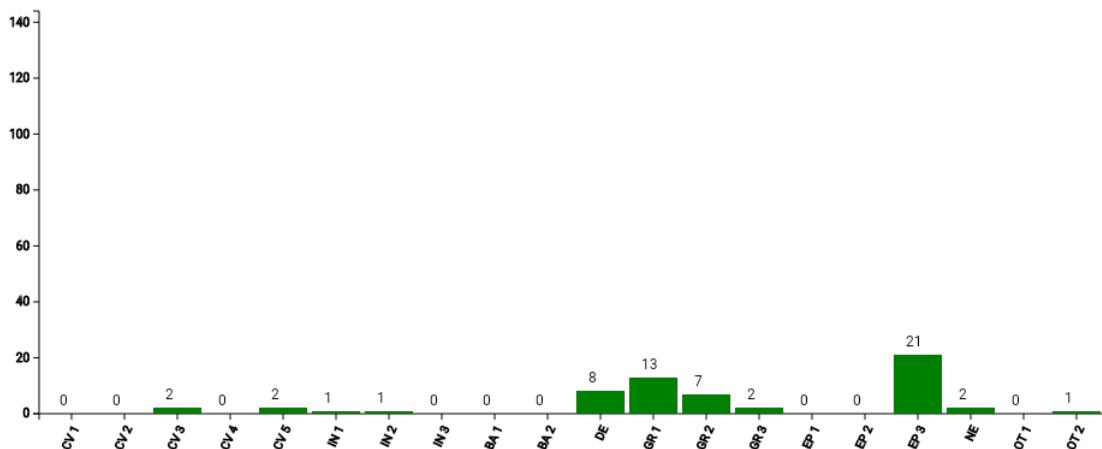
Remaining tree microhabitats by code (N after harvest)
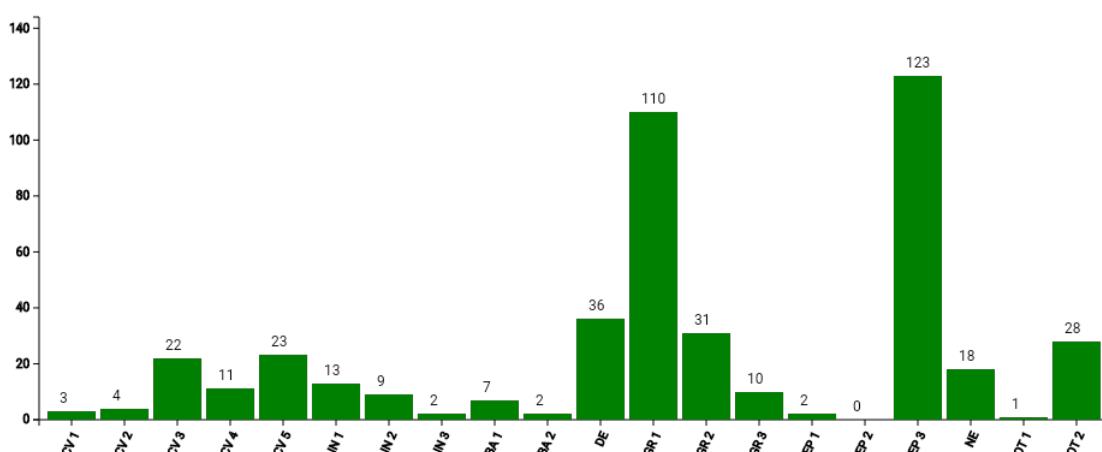
For more details on codes consult the field guide "Catalogue of tree microhabitats" or the tree microhabitat app.

Conflict trees (stand data)
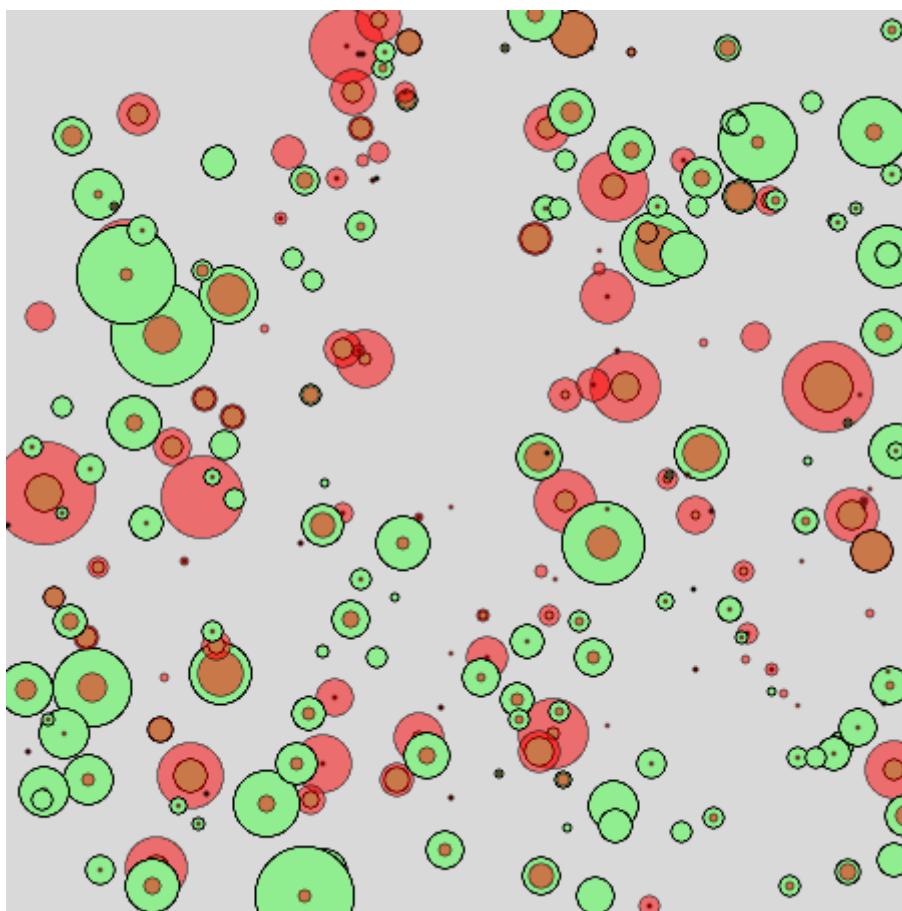
Description:
Overlay of economic and habitat value: red circles (economic value), green circles (habitat value); circle size according to numerical values (e.g. large circles mean high values); trees with very low values are not visible. Trees where both values overlap considerably represent so called "conflict trees".

Removed trees

Tree	DBH (cm)	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Reason
alder (91) Alnus glutinosa	75.8	0.45	6.4	639	36	Regeneration
narrow-leafed ash (7) Fraxinus angustifolia	70	0.39	6.3	641	6	Regeneration
pedunculate oak (220) Quercus robur	60.5	0.29	4.3	440	16	Regeneration
pedunculate oak (189) Quercus robur	55	0.24	3.4	348	6	Regeneration
pedunculate oak (215) Quercus robur	54.5	0.23	3.5	357	36	Regeneration
narrow-leafed ash (94) Fraxinus angustifolia	48	0.18	2.9	287	3	Regeneration
narrow-leafed ash (89) Fraxinus angustifolia	47	0.17	2.6	263	0	Regeneration
pedunculate oak (78) Quercus robur	46.5	0.17	2.5	259	0	Regeneration
alder (44) Alnus glutinosa	46.5	0.17	2.6	270	22	Regeneration
narrow-leafed ash (26) Fraxinus angustifolia	42.5	0.14	2.1	214	24	Regeneration
hornbeam (42) Carpinus betulus	41	0.13	1.6	160	60	Regeneration
narrow-leafed ash (129) Fraxinus angustifolia	39	0.12	1.7	170	12	Regeneration
hornbeam (148) Carpinus betulus	39	0.12	1.7	166	18	Regeneration
alder (38) Alnus glutinosa	36	0.1	1.2	122	0	Regeneration
narrow-leafed ash (97) Fraxinus angustifolia	33.5	0.09	1.3	127	4	Regeneration
hornbeam (74) Carpinus betulus	33	0.09	1	103	27	Regeneration
narrow-leafed ash (193) Fraxinus angustifolia	32	0.08	1	102	44	Regeneration
hornbeam (82) Carpinus betulus	32	0.08	0.9	87	0	Regeneration
London sycamore (244) Platanus hybrida	29.5	0.07	0.7	70	24	Regeneration
black locust (149) Robinia pseudoacacia	28.5	0.06	0.8	78	4	Regeneration
Field elm (127)	28	0.06	0.5	51	4	Regeneration

Tree	DBH (cm)	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Reason
Ulmus minor						
hornbeam (191) Carpinus betulus	28	0.06	0.6	65	24	Regeneration
alder (43) Alnus glutinosa	27	0.06	0.7	68	28	Regeneration
hornbeam (233) Carpinus betulus	25.5	0.05	0.5	45	22	Regeneration
Field elm (59) Ulmus minor	24	0.05	0.4	41	24	Regeneration
hornbeam (5) Carpinus betulus	24	0.05	0.3	31	4	Regeneration
hornbeam (234) Carpinus betulus	24	0.05	0.5	47	4	Regeneration
hornbeam (20) Carpinus betulus	23.5	0.04	0.4	45	30	Regeneration
hornbeam (50) Carpinus betulus	22.5	0.04	0.3	29	24	Regeneration
Field elm (162) Ulmus minor	22	0.04	0.3	30	0	Regeneration
Field elm (139) Ulmus minor	21.5	0.04	0.3	26	40	Regeneration
hornbeam (86) Carpinus betulus	21.5	0.04	0.3	35	0	Regeneration
alder (4) Alnus glutinosa	21	0.04	0.3	31	28	Regeneration
Field elm (145) Ulmus minor	21	0.04	0.3	27	18	Regeneration
hornbeam (6) Carpinus betulus	20.5	0.03	0.3	26	4	Regeneration
Field elm (131) Ulmus minor	19	0.03	0.2	20	0	Regeneration
hornbeam (218) Carpinus betulus	18	0.03	0.2	22	9	Regeneration
hornbeam (142) Carpinus betulus	18	0.03	0.2	22	20	Regeneration
hornbeam (141) Carpinus betulus	16	0.02	0.2	18	24	Regeneration
Field elm (132) Ulmus minor	15	0.02	0.1	13	0	Regeneration
hornbeam (102) Carpinus betulus	12	0.01	0.1	8	0	Regeneration

Tree	DBH (cm)	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Reason
field maple (80) Acer campestre	8.5	0.01	0	3	0	Regeneration

Retention trees

Tree	DBH (cm)	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Reason
pedunculate oak (88) Quercus robur	75.5	0.45	8	801	63	Seed tree
pedunculate oak (140) Quercus robur	71.5	0.4	6.6	736	0	Seed tree
pedunculate oak (40) Quercus robur	67	0.35	6.1	613	34	Seed tree
wild cherry (184) Prunus avium	66	0.34	4	398	77	Habitat tree
narrow-leafed ash (130) Fraxinus angustifolia	66	0.34	5.3	551	27	Seed tree
narrow-leafed ash (206) Fraxinus angustifolia	65	0.33	5	519	25	Seed tree
pedunculate oak (224) Quercus robur	64	0.32	5.7	574	42	Seed tree
narrow-leafed ash (85) Fraxinus angustifolia	61	0.29	4.5	464	4	Seed tree
alder (8) Alnus glutinosa	61	0.29	3.9	399	22	Seed tree
narrow-leafed ash (13) Fraxinus angustifolia	57.5	0.26	4.2	420	60	Seed tree
hornbeam (101) Carpinus betulus	55	0.24	3.3	329	132	Seed tree
pedunculate oak (155) [REPLACE_DEAD]Quercus robur	55	0.24	3.1	309	104	Habitat tree
narrow-leafed ash (81) Fraxinus angustifolia	54.5	0.23	3.6	360	76	Habitat tree
narrow-leafed ash (21) Fraxinus angustifolia	54	0.23	3.8	384	27	Seed tree
narrow-leafed ash (114) Fraxinus angustifolia	53.5	0.23	3.3	340	68	Seed tree
narrow-leafed ash (96) Fraxinus angustifolia	50	0.2	3.1	319	28	Seed tree
wild cherry (192) [REPLACE_DEAD]Prunus avium	49	0.19	0.8	76	50	Habitat tree
narrow-leafed ash (45) Fraxinus angustifolia	49	0.19	2.5	254	40	Habitat tree
hornbeam (247) Carpinus betulus	47.5	0.18	2	201	54	Seed tree
narrow-leafed ash (39) Fraxinus angustifolia	47	0.17	3	305	0	Seed tree

Tree	DBH (cm)	Basal area (m²)	Volume (m³)	Economic value (€)	Habitat value (pts.)	Reason
Field elm (158) Ulmus minor	44.5	0.16	1.7	176	10	Seed tree
hornbeam (251) Carpinus betulus	42.5	0.14	1.7	168	4	Seed tree
field maple (17) Acer campestre	42	0.14	1.6	161	92	Seed tree
hornbeam (249) Carpinus betulus	40	0.13	1.5	146	30	Seed tree
hornbeam (179) Carpinus betulus	39.5	0.12	1.8	180	28	Seed tree
alder (180) Alnus glutinosa	38.5	0.12	1.4	144	42	Habitat tree
hornbeam (15) Carpinus betulus	38	0.11	1.6	159	31	Seed tree
narrow-leafed ash (33) [REPLACE_DEAD]Fraxinus angustifolia	37.5	0.11	1.6	159	38	Habitat tree
narrow-leafed ash (87) Fraxinus angustifolia	36.8	0.11	1.4	138	58	Habitat tree
hornbeam (219) Carpinus betulus	36	0.1	1.3	130	57	Seed tree
Field elm (150) Ulmus minor	36	0.1	1.2	31	24	Seed tree
hornbeam (261) [REPLACE_DEAD]Carpinus betulus	35	0.1	1	100	127	Habitat tree
hornbeam (79) Carpinus betulus	35	0.1	1	97	128	Habitat tree
hornbeam (173) Carpinus betulus	33.5	0.09	1	105	12	Seed tree
alder (49) [REPLACE_DEAD]Alnus glutinosa	33	0.09	1.1	111	98	Habitat tree
Field elm (194) Ulmus minor	32	0.08	0.7	73	28	Seed tree
alder (71) Alnus glutinosa	31	0.08	0.9	94	4	Seed tree
hornbeam (51) Carpinus betulus	25	0.05	0.6	58	18	Habitat tree
alder (92) Alnus glutinosa	20.5	0.03	0.3	31	3	Seed tree
hornbeam (203) [REPLACE_DEAD]Carpinus betulus	19.5	0.03	0.1	12	4	Habitat tree