

Protection of the largest Great Capricorn (*Cerambyx cerdo*) metapopulation in Brandenburg (Germany)

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LIFE MIPP

European Workshop

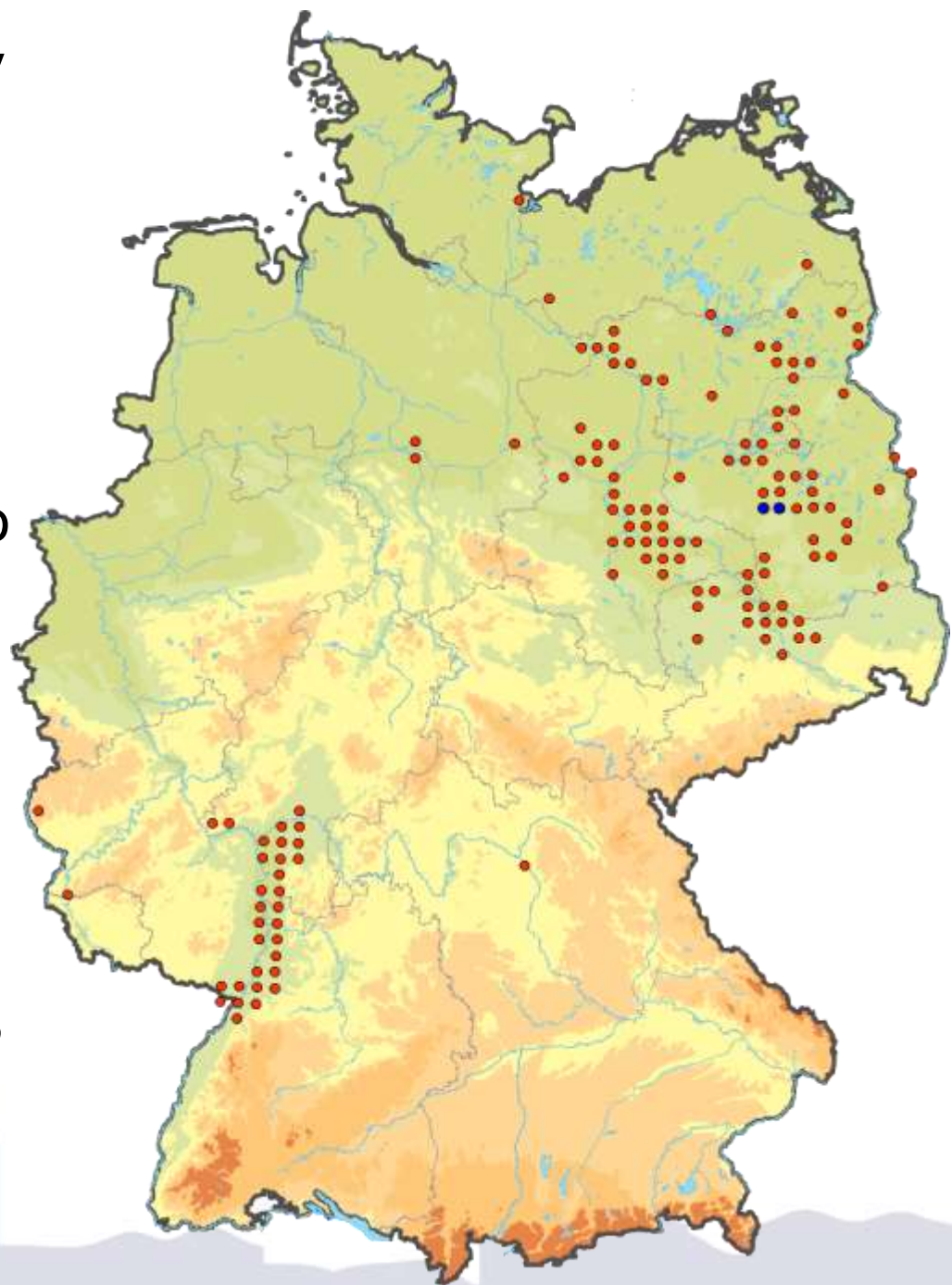
Monitoring of saproxylic beetles and other insects protected in the European Union

Mantova (Italy), 24th - 26th May 2017



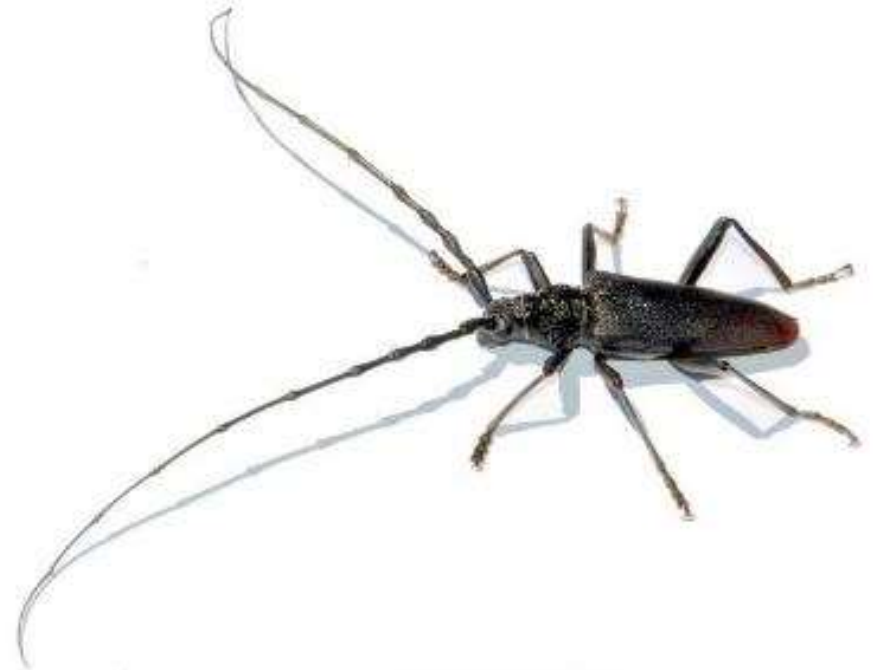
1 | Status in Germany (raster based)

- Spatial centers:
Northeastern lowland and
Rhine Valley
- Brandenburg: 3,688
breeding trees assigned to
79 assumed
metapopulations
- Baruth Glacial Valley:
1,668 breeding trees
assigned to 6 assumed
metapopulations (45,5 %)
- Of these: largest
metapopulation with 1,626
breeding trees



1 | Brandenburg investigation especially: Baruth glacial valley

- Breeding trees:
 1. All exit holes
 2. Fresh exit holes
- Breeding tree parameters:
 1. Vitality (A-C living, D dead, E fallen)
 2. Diameter (DBH)
 3. Exposition to sun
- Biotope parameters:
 1. Age structure
 2. Tree species composition
 3. Shading in general
 4. Land use



2 | Results: Breeding trees

Breeding trees in Baruth Glacial Valley
(10,700 ha)

- 1,668 breeding trees, of these:
 - 1,225 living and
 - 443 dead and no longer usable
- 6 assumed metapopulations (based on national guidelines)
- Tree species:
 - Mainly Common oaks (*Q. robur*)
 - 4 Red oaks (*Q. rubra*), 2 Pin oaks (*Q. palustris*) (all with severe bark damages by cars)



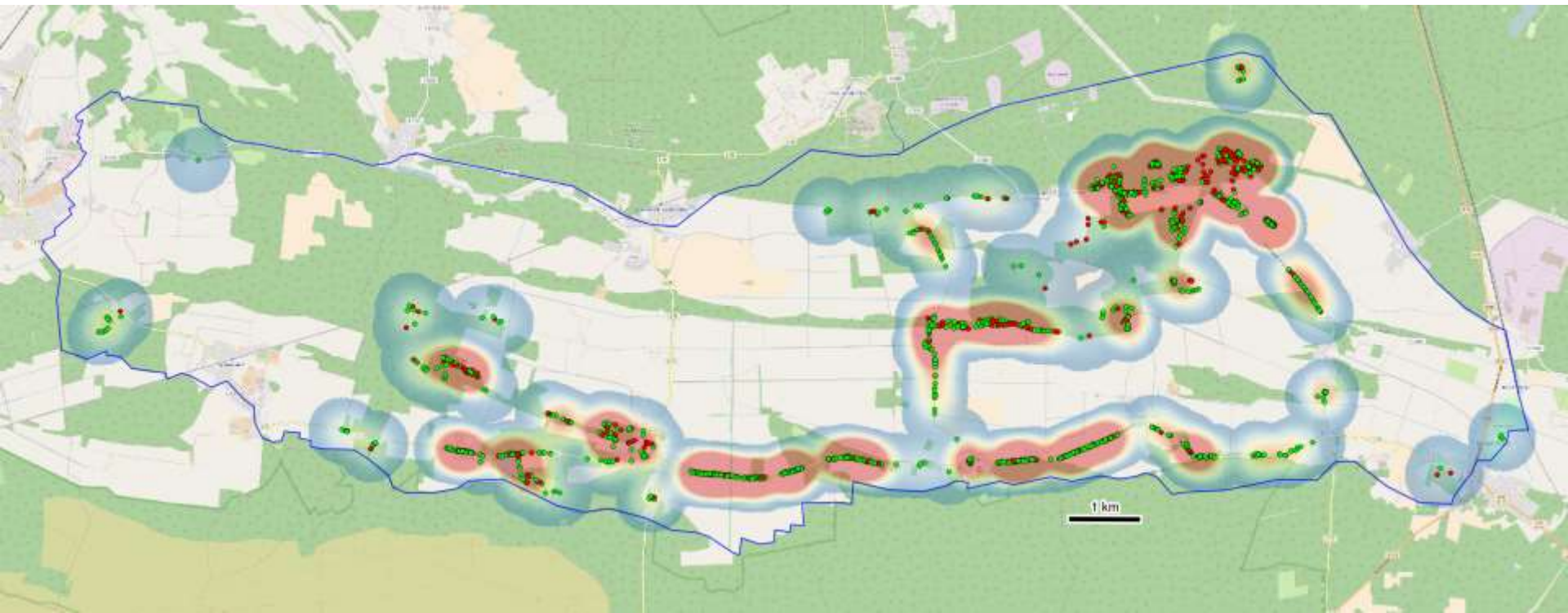
2 | Results: Breeding trees, distribution

Breeding trees:


- Living
- Dead

Heatmap:

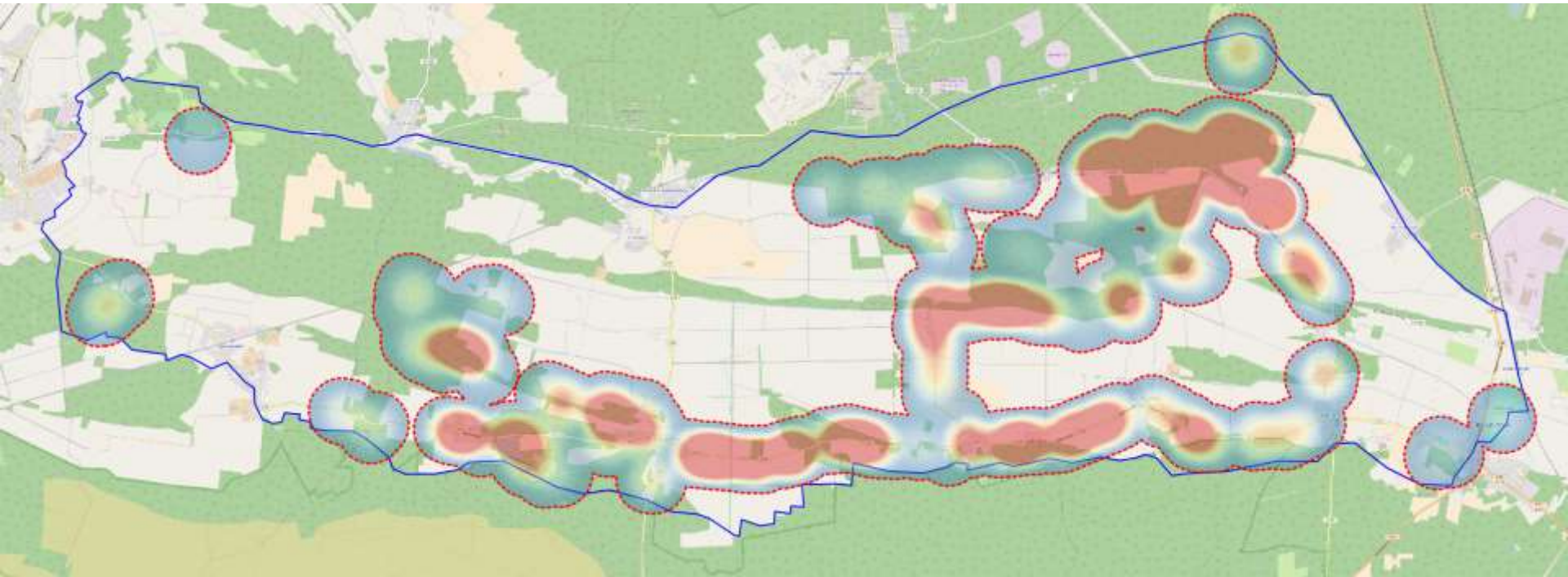
Buffer 500 m unweighted



2 | Results: distribution, assumed metapopulations

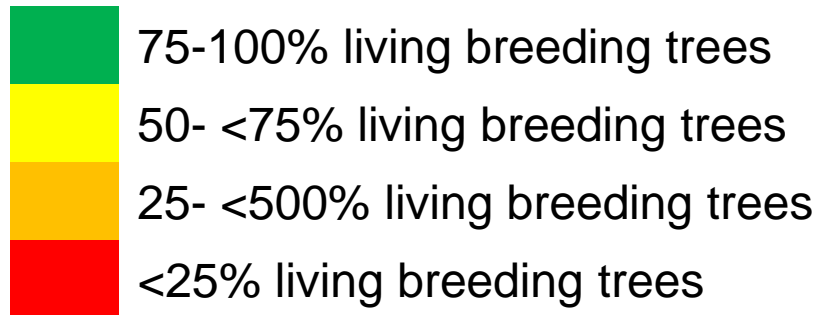
 Assumed metapopulations

Heatmap:
Buffer 500 m unweighted



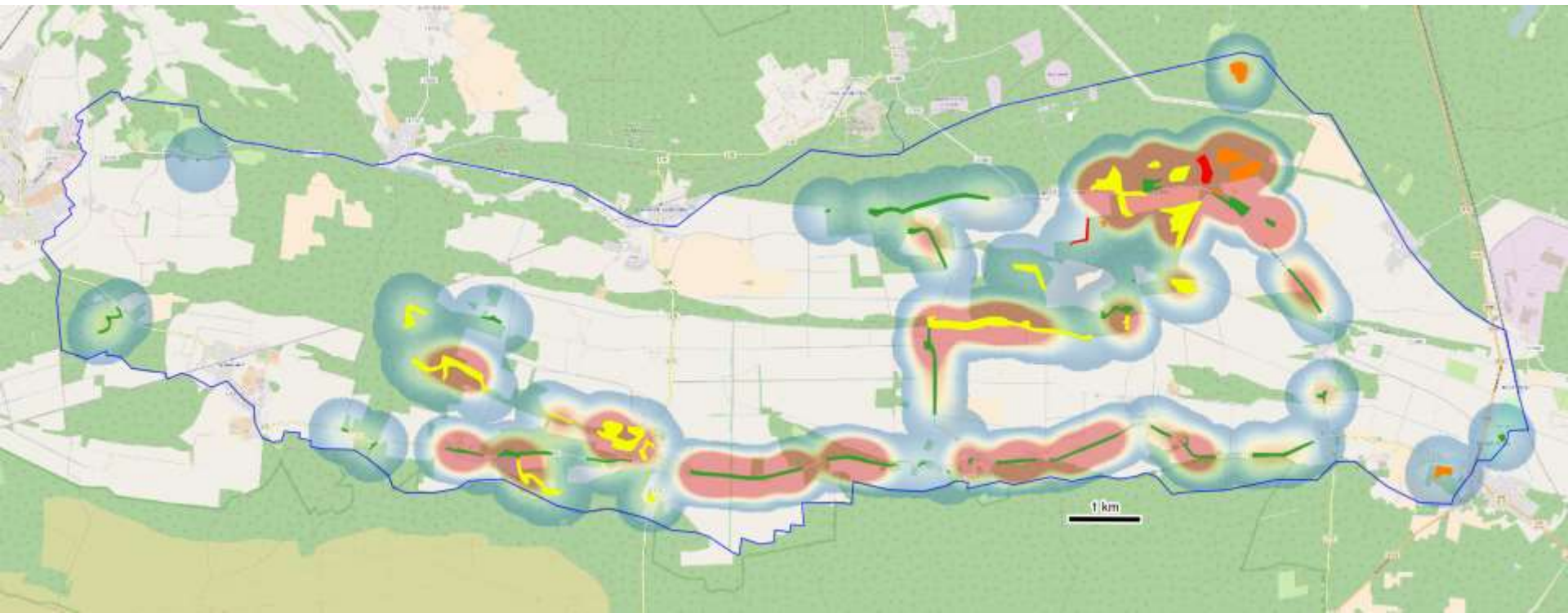
2 | Results: Proportion of living breeding trees in stands

Tree stands:

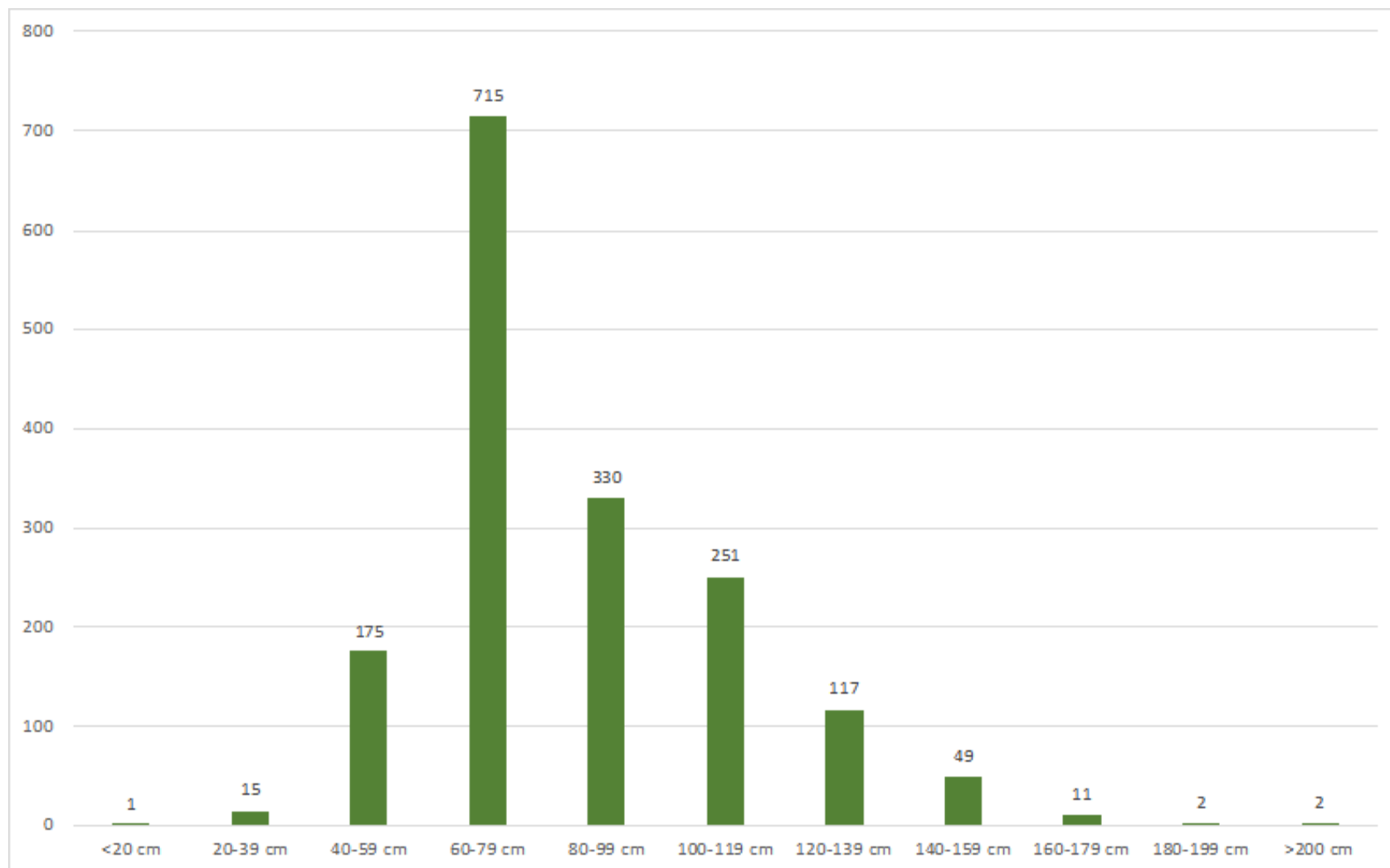


Heatmap:

Buffer 500 m unweighted



2 | Results: Breeding trees, stem diameters



2 | Results:

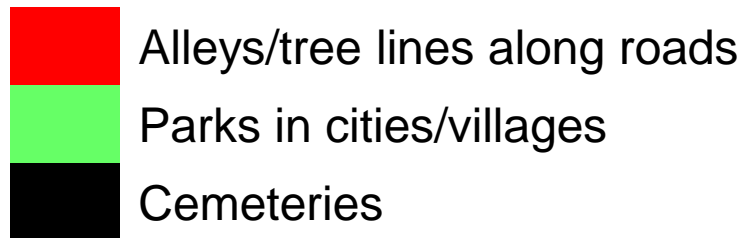
Land use

- in forests: 862, of these
 - 689 in deciduous forests (partly mixed with coniferous trees), of these only 221 in oak forests, all the remaining trees in other deciduous forests (some as reserved oaks)
 - 173 as reserved oaks embedded in coniferous forests
- in avenues and tree-lines along roads and paths: 695
- in parks and cemeteries of villages: 107
- single trees in villages: 4

2 | Results

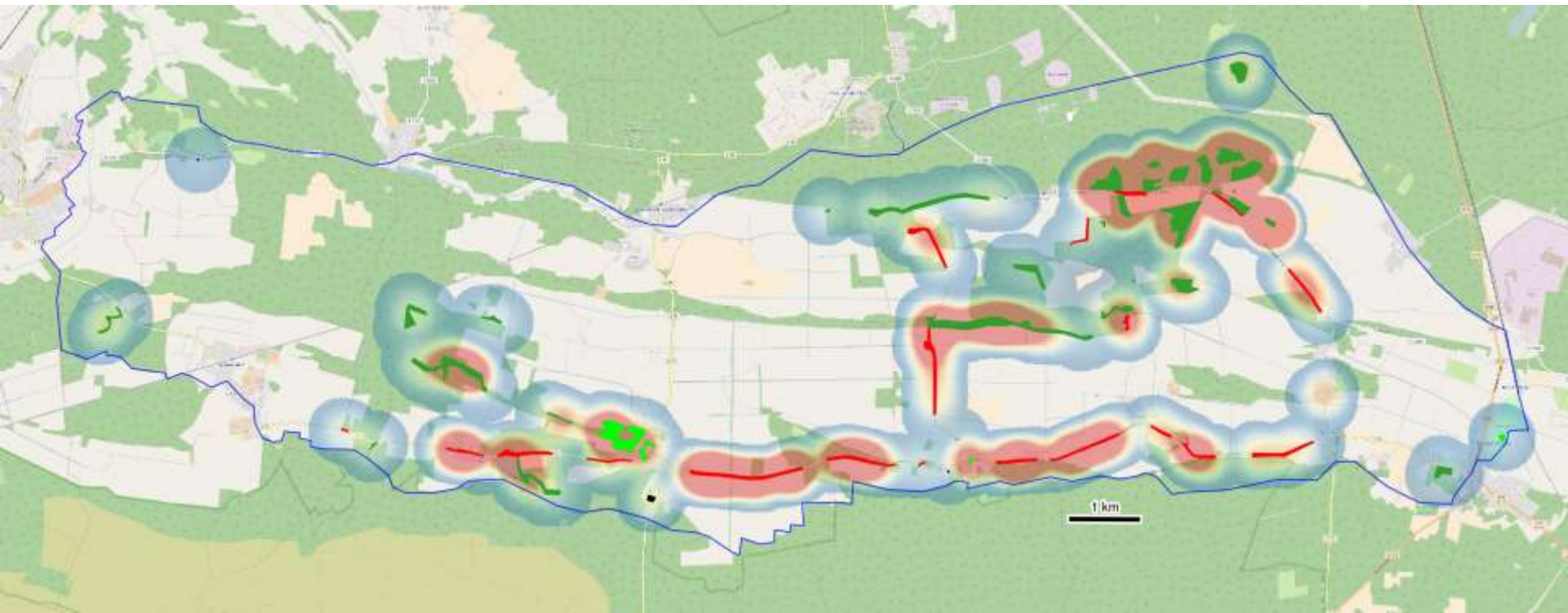
Land use

Land use:



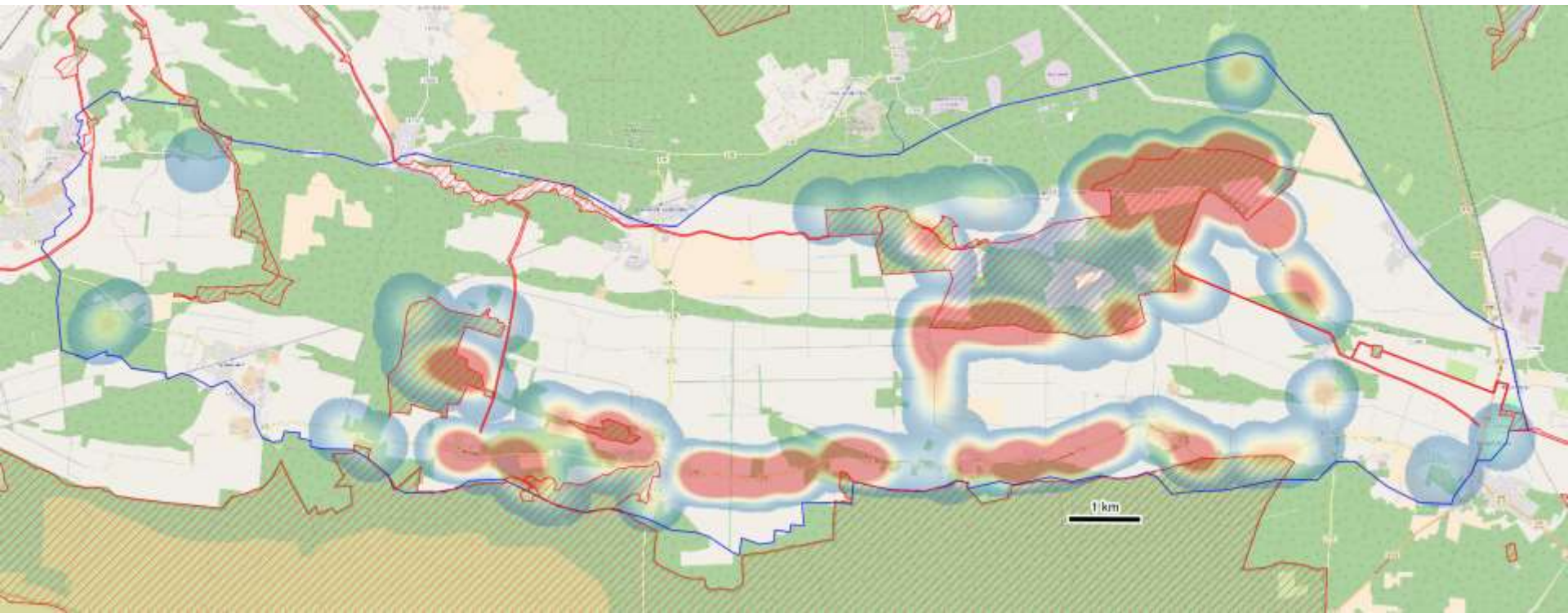
Heatmap:

Buffer 500 m unweighted



2 | Results: Distribution of hot-spots relative to NATURA 2000-sites

Vitality / No. of trees	Baruth Glacial Valley	In Natura 2000 sites	Outside Natura 2000 sites
All breeding trees	1,668	797	861
Vitality A (living)	266	32	234
Vitality B (living)	572	205	367
Vitality C (living)	387	237	150
Vitality D (dead)	395	288	97
Vitality E (dead)	48	35	13



2 | Results: Conservation status in and outside NATURA 2000-sites

SCI-No.	Site/Metapopulation	P	H	I	CS
SCI DE 3946-301	Schöbendorfer Busch	A	C	B	B
SCI DE 3946-302	Park Stülpe und Schönefelder Busch	B	B	B	B
SCI DE 3945-304	Stärtchen und Freibusch	B	B	B	B
SCI DE 3945-305	Espenluch und Stülper See	C	C	C	C
Outside SCI	Baruth Glacial Valley	A	A	C	B

Based on national guidelines:

P = sub-criterion ‚population‘

H = sub-criterion ‚habitat‘

I = sub-criterion ‚impacts‘

CS = conservation status

3 | Risk assessment

- Land use:
 - Forestry
 - Traffic safety (avenues, parks, cemeteries, villages)
 - Land ownership
- Structure:
 - Shading
 - Age structure
 - Tree species composition
- Landscape:
 - Hydrology



2017



2014





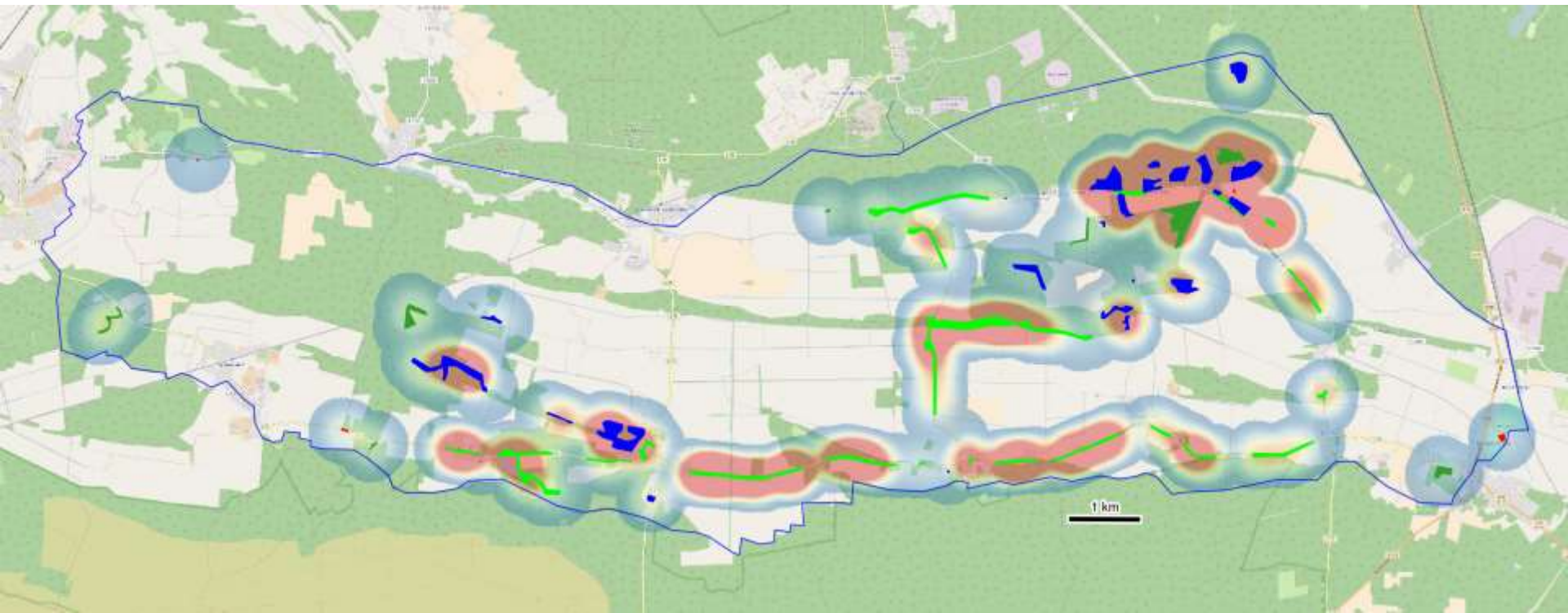






3 | Risk assessment of tree stands

Insolation of tree stands

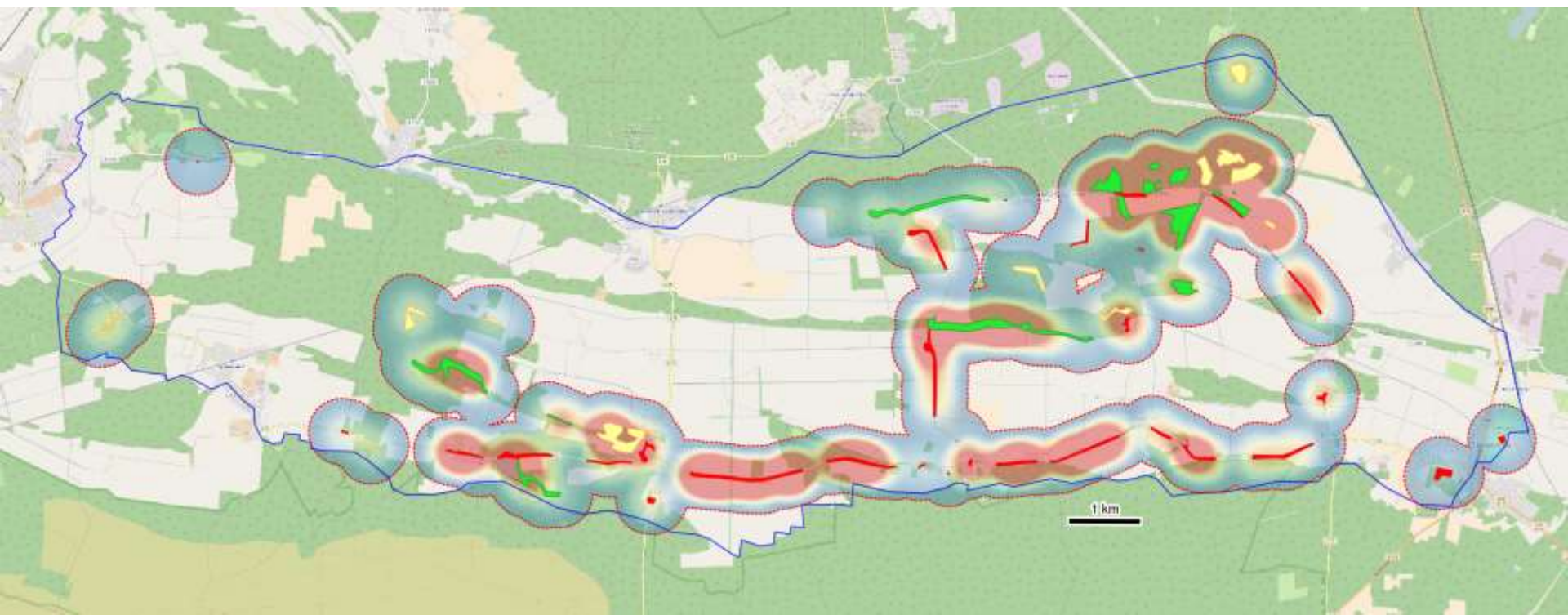


3 | Risk assessment of tree stands

- High extinction risk:
 - Alleys, tree lines alongside streets: traffic safety
 - Trees in villages (single, parks, cemeteries): traffic safety
 - Forests partly (e.g. only isolated reserved oaks in pine forests)
 - Forests partly (strong groundwater lowering)
- Medium extinction risk:
 - Several forests (unbalanced age structure, strong shading by other tree species)
- Low extinction risk:
 - Some Oak forests (less shaded, partly more balanced age structure)

3 | Risk assessment of tree stands

Estimated *Cerambyx* extinction risk:




3 | Risk assessment: living breeding trees in less risky stands

Breeding trees:

- Recently living only

Heatmap:

Buffer 500 m unweighted

 Assumed recent metapopulations



3 | Risk assessment living breeding trees in less risky stands

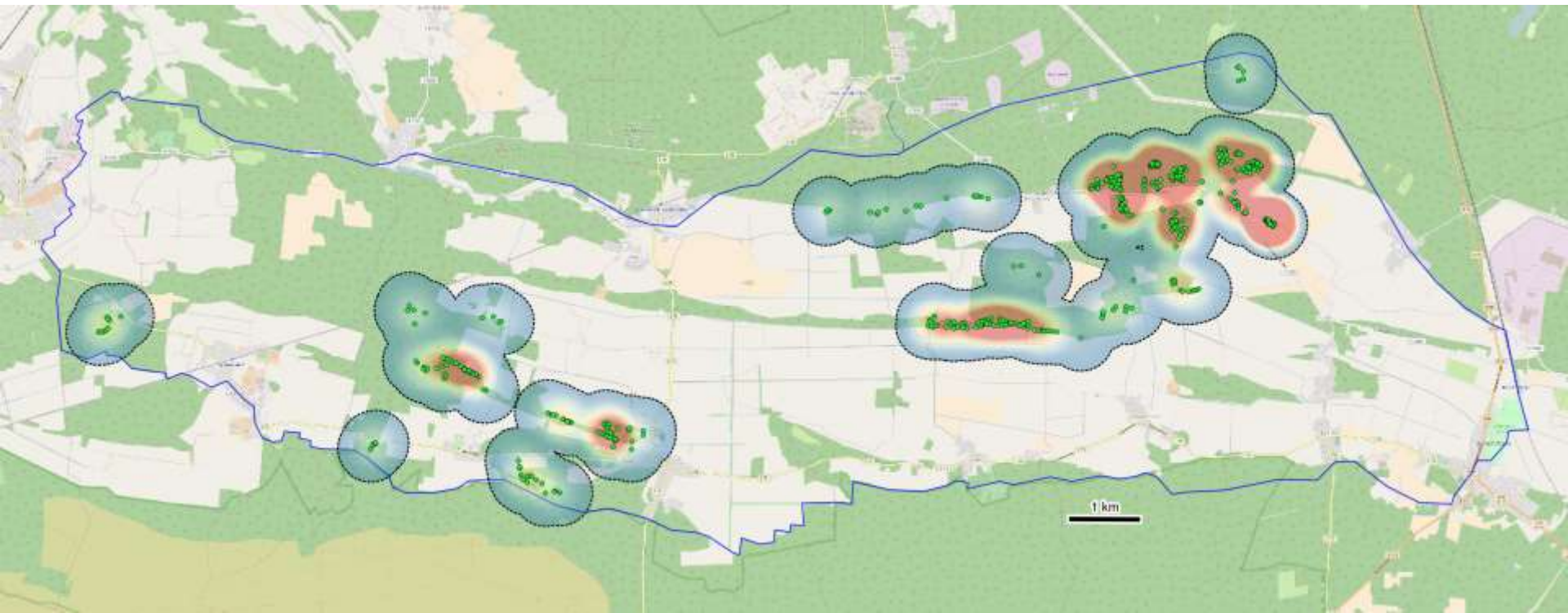
Breeding trees:

- Recently living only
(medium/low ext. risk)

▭ Assumed future metapopulations

Heatmap:

Buffer 500 m unweighted



3 | Risk assessment

Breeding trees:

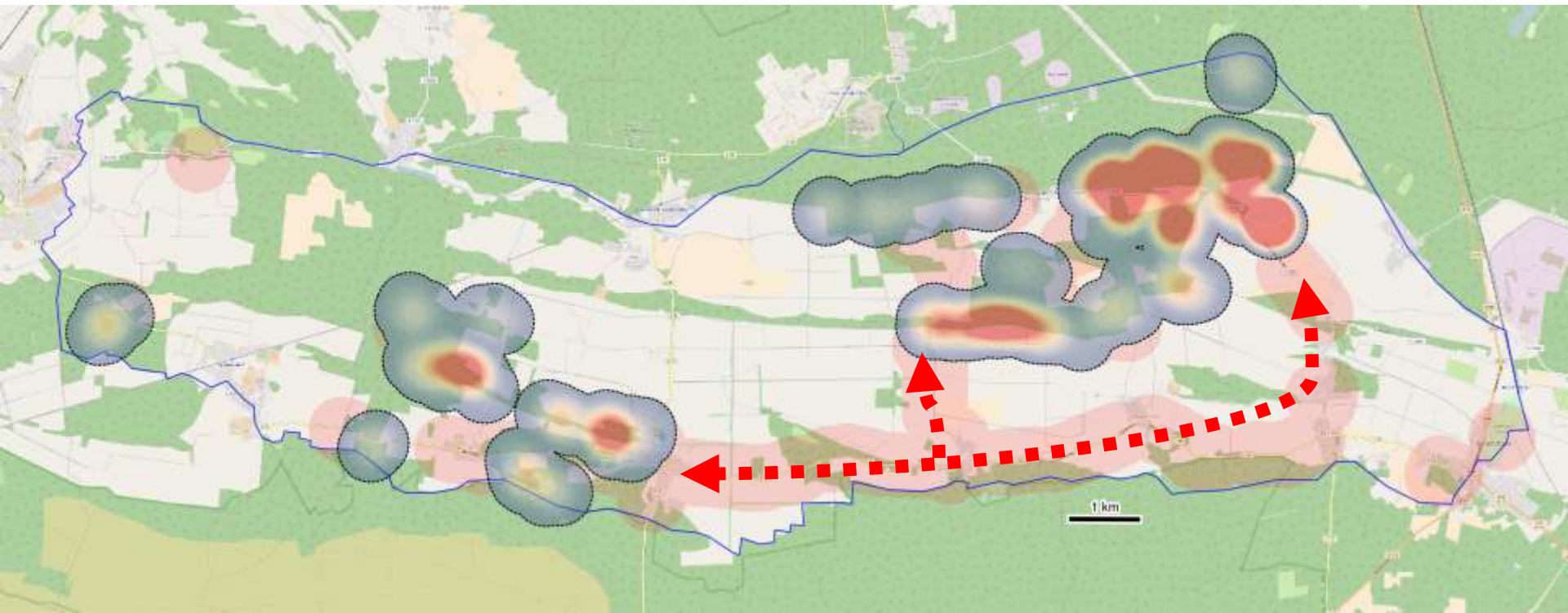
- Recently living only
(medium/low ext. risk)

▭ Assumed future metapopulations

▭ Assumed recent metapopulations

Heatmap:

Buffer 500 m unweighted



4 | Find a strategy: What could be done?

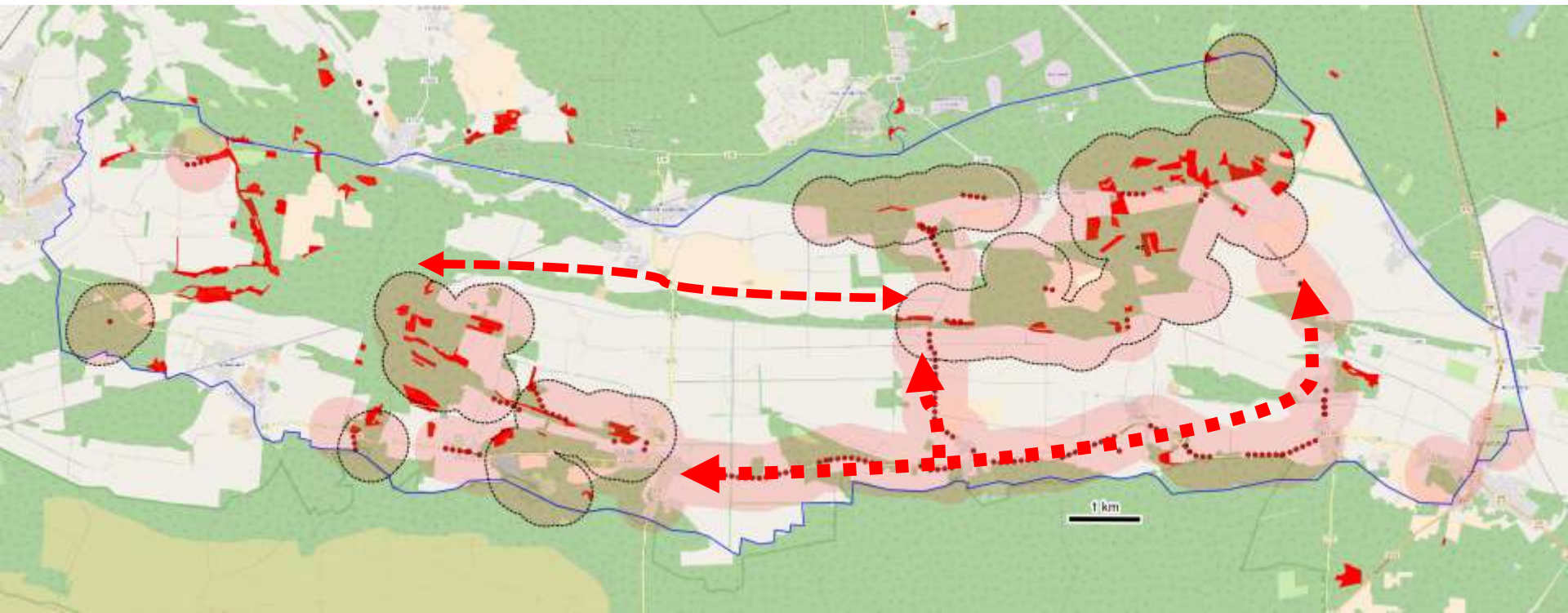
Decision on spatial distribution of measures based on:

- Tree species composition: oaks available?
 - If yes: oaks of different ages? Possibility of habitat development within next 20-30 years?
 - If yes: only old oaks? Growth of new trees takes too long!
 - If no: No development possible for foreseeable future.
- Property of land:
 - Private: Usually no chance for action
 - Public: Opportunity for action, but difficult process
 - NGO: Best chances
- Future risk:
 - Foreseeable traffic safety risk?
 - Other tree species (e.g. beeches, maple, ...) better suited at the local stand?

4 | Find a strategy: What about habitat connectivity?

Glacial dune? **K.o.:** no oaks, too late for planting

Recent alleys? **K.o.:** oaks too old, too late for planting

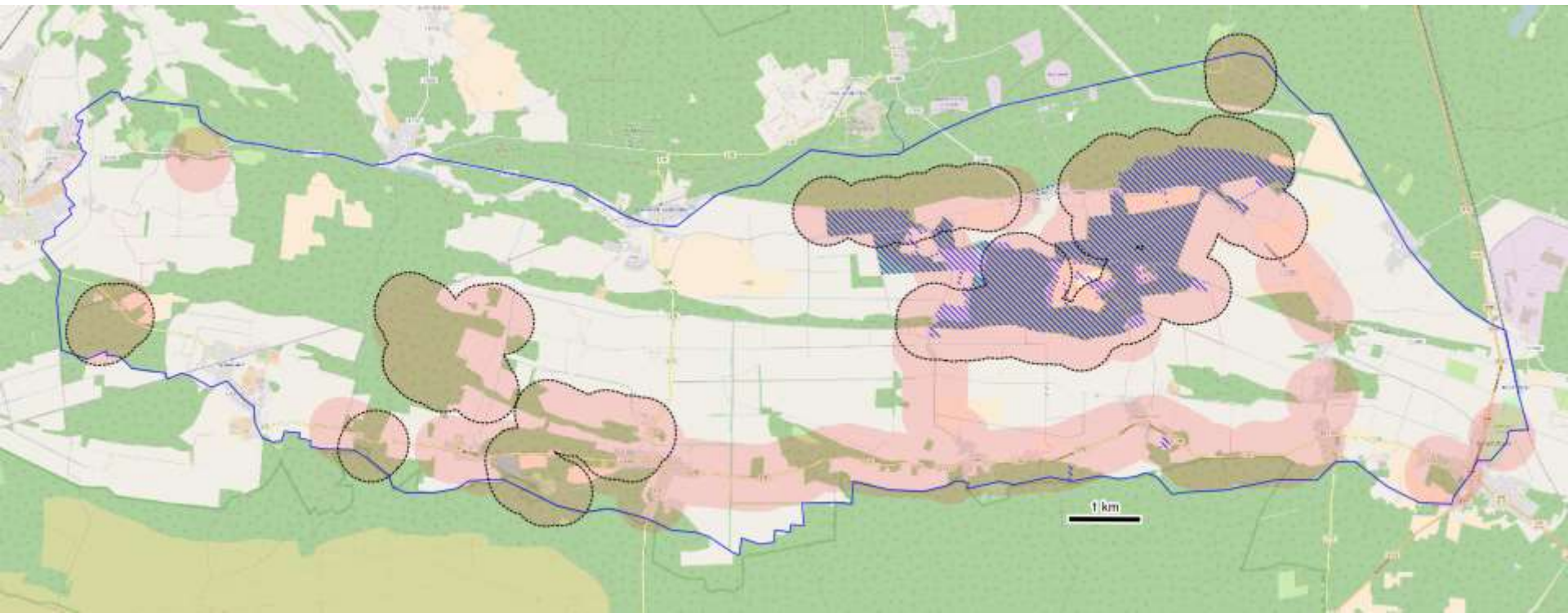


4 | Find a strategy: Who can contribute?

Participant	Land owner	Competences		Available resources			Cooperation readiness	<i>Cerambyx</i> project
		land use	beetles	human	financial	technical		
Public forest owners	+	+	-	0/+	0/+	+	0	could be involved
Private forest owners	+	0/+	+	-	-/0	-/0	-	could be involved
Local NGO	+	+	0	0	0	0	+	Project holder
Federal technical authority (strategic responsibility DE)	-	0/+	0/+	-	+	-	+	Main financial support
State technical authority (strategic responsibility)	-	-/0	-/0	-	-/0	-	0/+	Professional participation
Lower authority (local responsibility for nature conservation)	-	-/0	-	-	-	-	-/0	should be involved
Planners	-	0	+	0	-/0	-	+	Application, Scientific/ professional support

4 | Find a strategy: Property of a NGO

- Recent goal: substantial improvement of NGO's property (= SCI DE 3946-301)
- Shift of *Cerambyx* core area from alleys to forest
- Why NGO as main actor? Responsible authorities are not able to act: no properties, no competence, no human resources, ...



5 | Objectives of NGO project

1. Preserving existing breeding trees and Great Capricorn beetle habitats;
2. Preserving and improving existing oak forests;
3. Transformation of coniferous and mixed forests into oak-rich (mixed) forests;
4. Connecting habitats.

5 | Planned measures:

- Pruning surroundings of breeding trees to reduce shading.
- Thinning of existing oak forests and reduction of the degree of crown density in all arboreal layers.
- Increasing the proportion of oak trees by planting and promoting natural rejuvenation of oaks.
- Cutting of coniferous trees and pre-growing deciduous trees (mainly oaks) in coniferous forests and mixed coniferous forests.
- Forest grazing on partial areas to create semi-open pasture landscapes.
- Improvement of the age structure in age-class forests.
- Artificial tree maturing.
- Planting young oaks along the roads (for far future).
- Oak planting in surrounding agricultural landscape.



I am a house...

Curious? Let's discuss that!



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LIFE MIPP European Workshop Monitoring of saproxylic beetles and other insects protected