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GOPROFOR MED  
101074738

# PRESERVING AND MANAGING FOREST HABITATS IN THE MEDITERRANEAN AREA

**WORKSHOP - MONDAY DECEMBER 4, 2023**



Co-funded by  
the European Union



## Protocols for the identification of Core Areas and Islands of Senescence

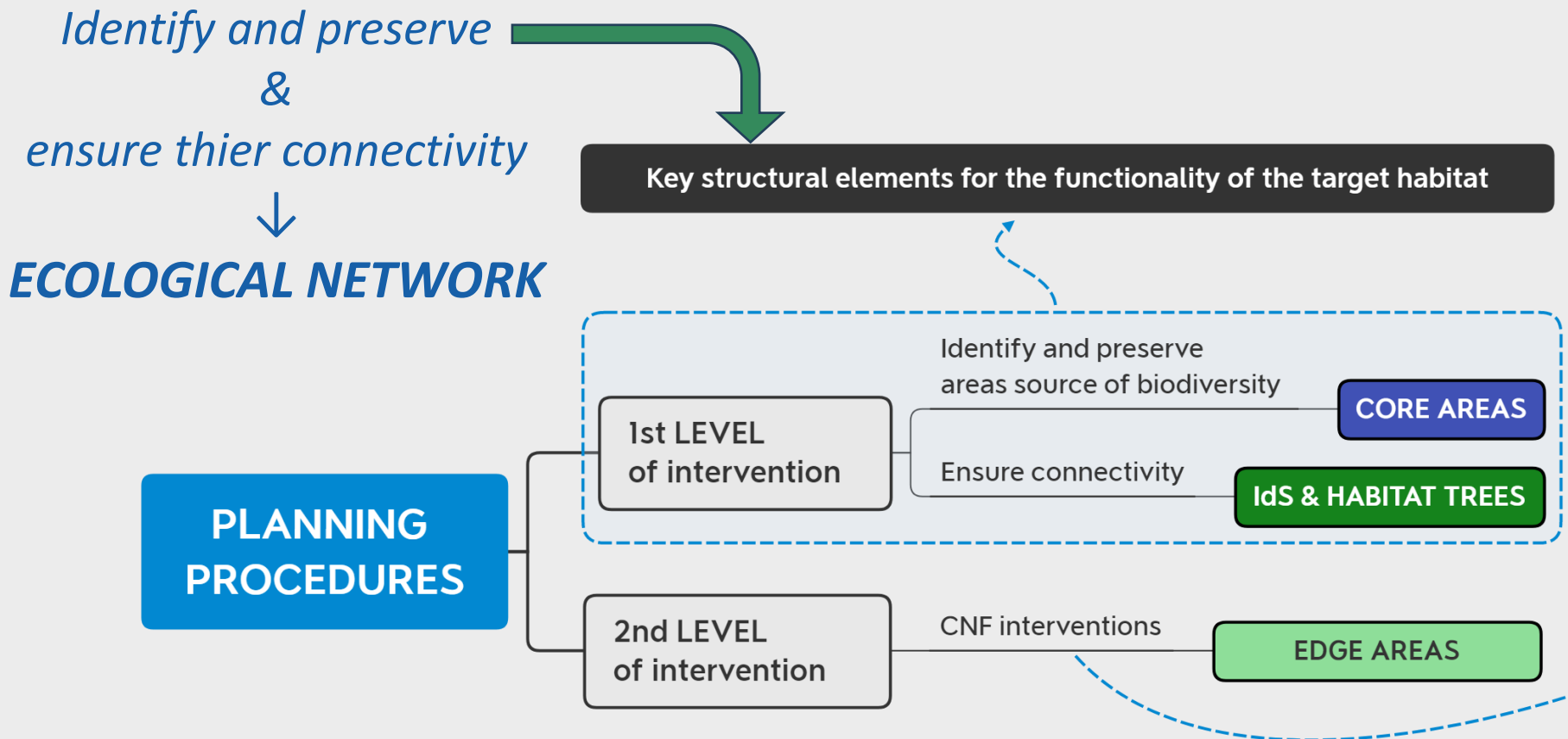
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## Main objective of the project

Improve the conservation status of 4 forest habitats in the Mediterranean area (9260, 9330, 9340, 9530\*), identifying and applying **techniques of forest planning** and intervention.

**First step:** create a **permanent system** for the conservation of forest biodiversity and of natural processes



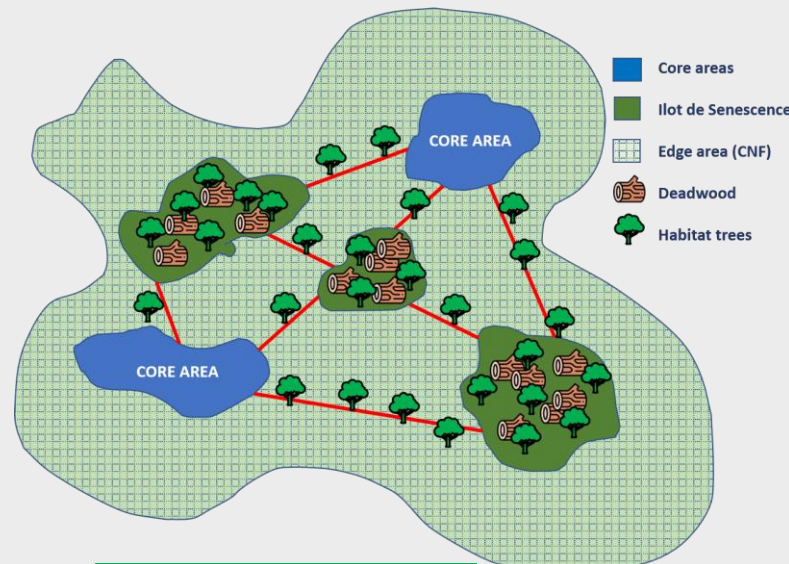
# Elements of the ecological network

## Core area (CA)

- ✓ Area of **high functional and qualitative value** (in relative terms)
- ✓ Element that will be **permanently maintained**
- ✓ **Function:** source of biodiversity and diffusion of mobile species
- ✓ **Minimum surface:** 5 ha

## Island of Senescence (IoS)

- ✓ **small forest reserve**
- ✓ **Function:** to preserve deadwood & other elements for ecosystem and species conservation (especially saproxylics)
- ✓ Connection of Core Areas, **favouring the dispersion** of less mobile species
- ✓ **Deadwood** in different stages of decomposition, **large trees, tree microhabitats** and **small gaps** are guaranteed
- ✓ Where necessary → **active management** to create/maintain these elements
- ✓ **Minimum surface:** 1 ha
- ✓ **Average distance:** 200-300 m
- ✓ **Desired coverage:** at least 5% of the target area



## Habitat Tree (HT)

- ✓ "a **standing living tree that bears tree microhabitat (TreM)**"
- ✓ **Function:** connection between Core Areas and IoS
- ✓ **N°:** ~ 10 for each IoS

## Edge Area (EA)

- ✓ "a **standing living tree that bears tree microhabitat (TreM)**".
- ✓ **Function:** connection between Core Areas and IoS.

## *Core Areas Requirements*

1. Correspondence with the definition of the target habitat  
**essential prerequisite**
2. Maturity and temporal continuity of the forest stand  
**recommended prerequisite**
3. High level of potential biodiversity  
**recommended prerequisite**

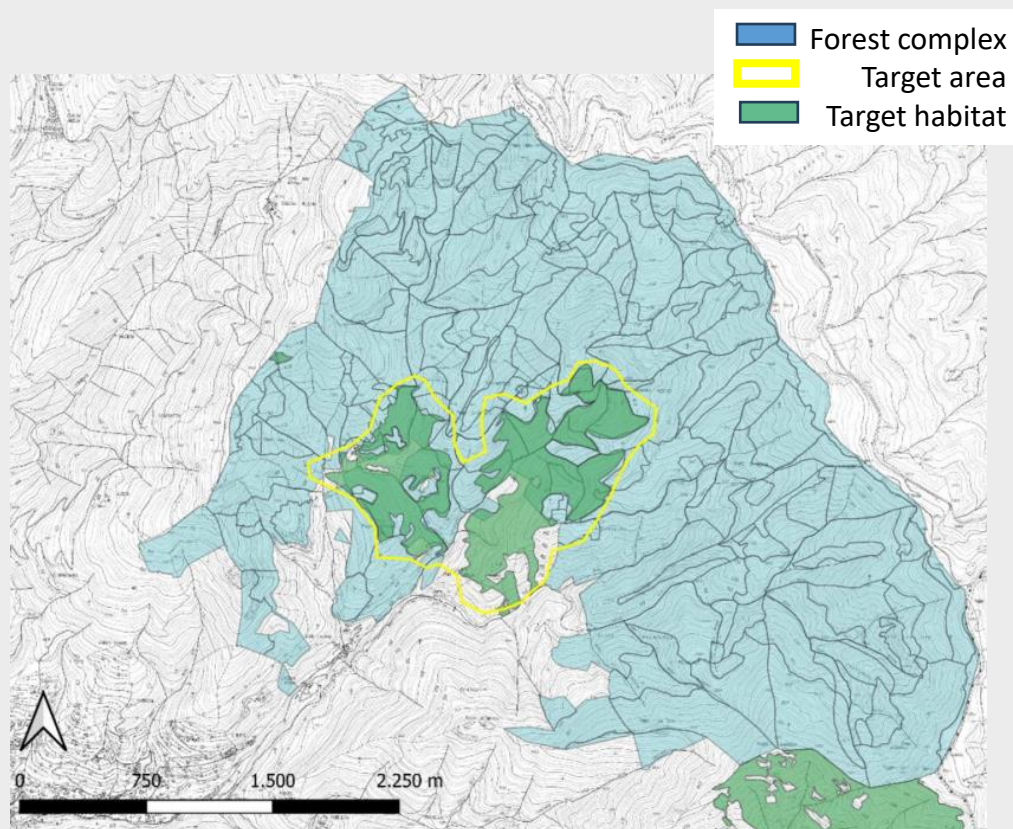
## *Field surveys for the characterisation of Core Areas*

## Core Areas Requirements

### 1. Correspondence with the definition of the target habitat essential prerequisite

This condition can be proven by analysing the following documents:

- ✓ Official map of Natura 2000 habitat types
- ✓ Forest stand description of a Forest Management Plan
- ✓ Satellite images
- ✓ SCI Management Plans
- ✓ Management Plans of reserves/protected areas

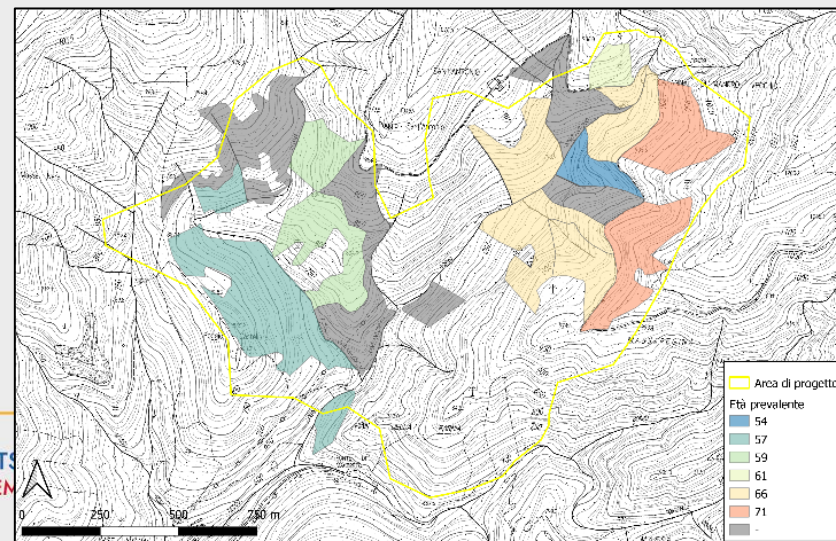
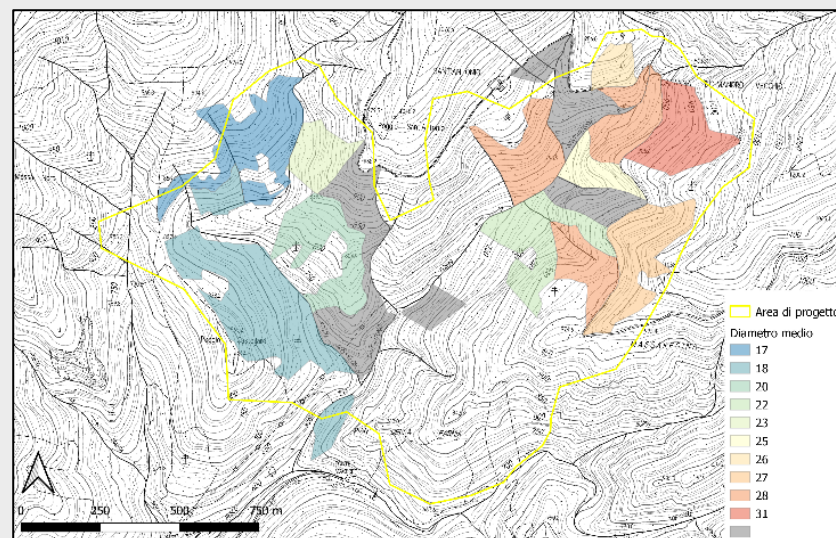


## Core Areas Requirements

### 2. Maturity and temporal continuity of the forest stand recommended prerequisite

Identification of areas characterised by higher forest maturity through:

- ✓ **Quantitative data** from a FMP (stand age, average diameter and average height).
- ✓ **Qualitative data** from a FMP (stand description)
- ✓ **Qualitative-quantitative data** from protected areas and N2000 areas Management Plans
- ✓ **Satellite images**
- ✓ **Historical orthophotos/documents**
- ✓ **LiDAR data** (crown size, tree height)

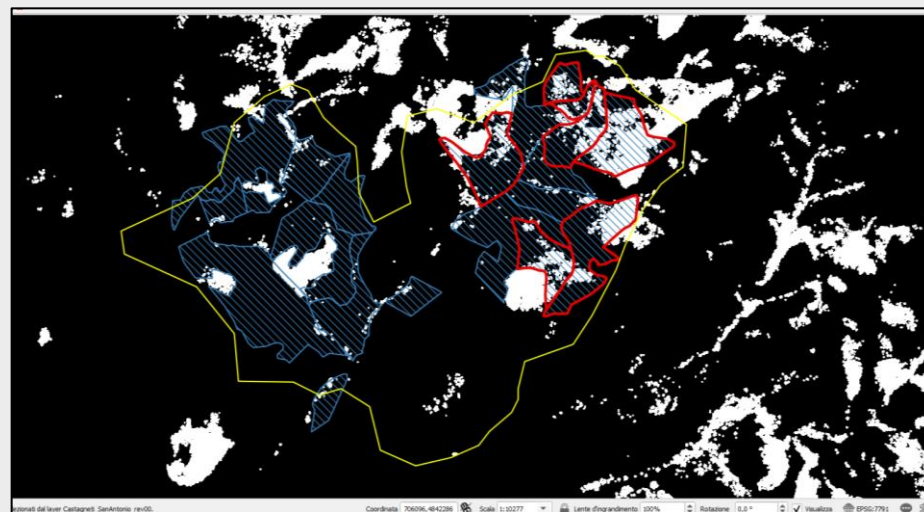


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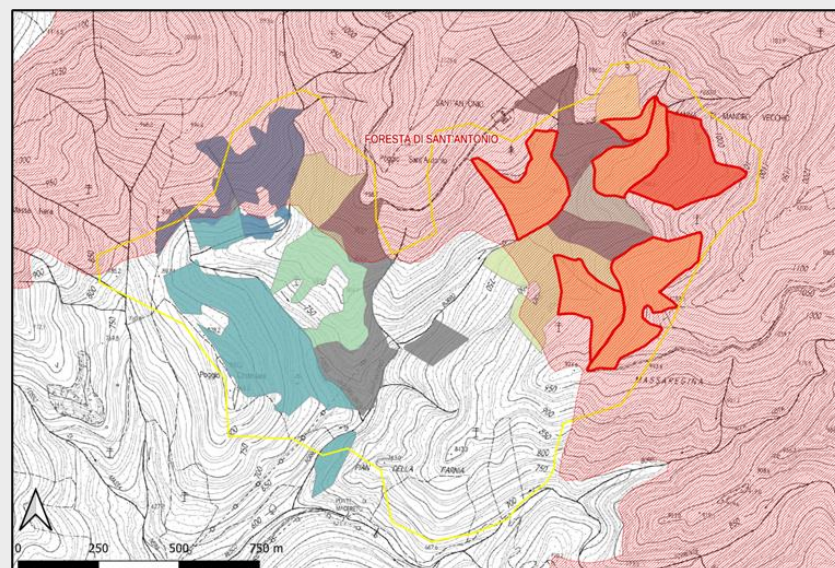
Analysis of LiDAR data; white color shows plants taller than 27 m, and likely to have a DBH greater than 67.5 cm

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Overlay of prevailing age and mean diameter maps with Protected Area boundaries

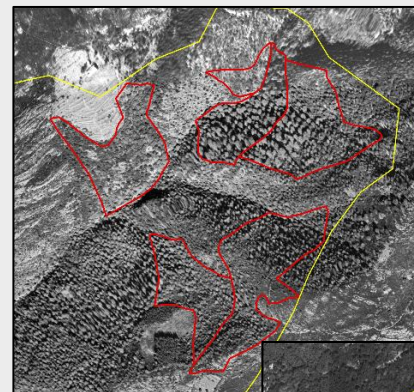


## Core Areas Requirements

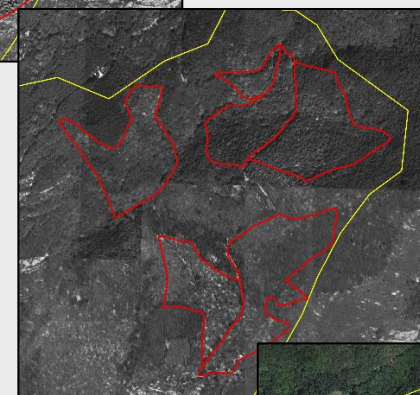
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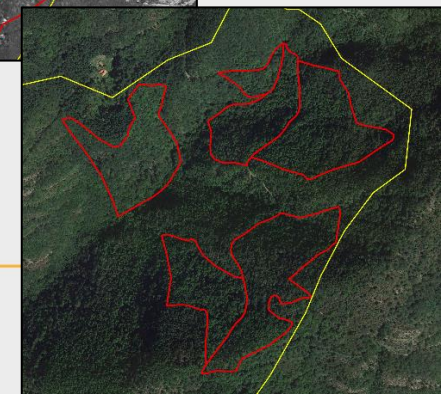
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- ✓ **Historical orthophotos/documents**
- ✓ **LiDAR data** (crown size, tree height)



historical orthophotos  
from 1954



... from 1966



Google  
satellite 2022

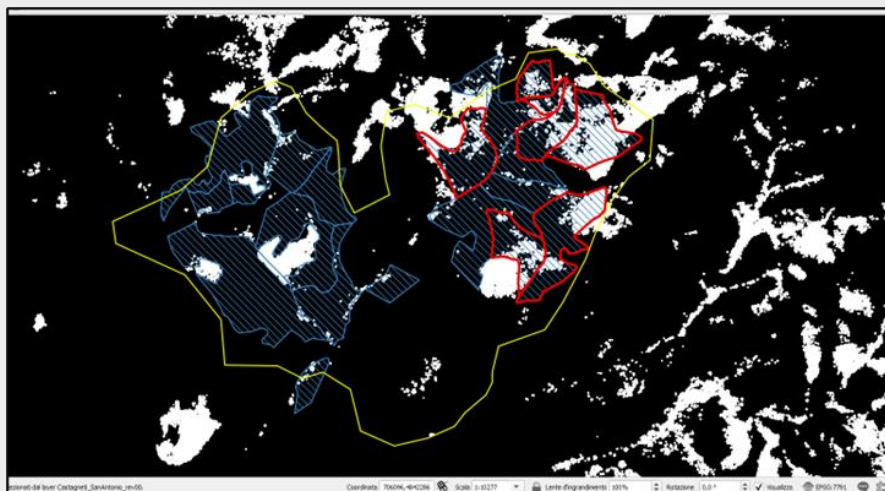
## Core Areas Requirements

### 3. High level of potential biodiversity recommended prerequisite

Analysis of the 10 key factors of the **Index of Biodiversity Potential (IBP)**

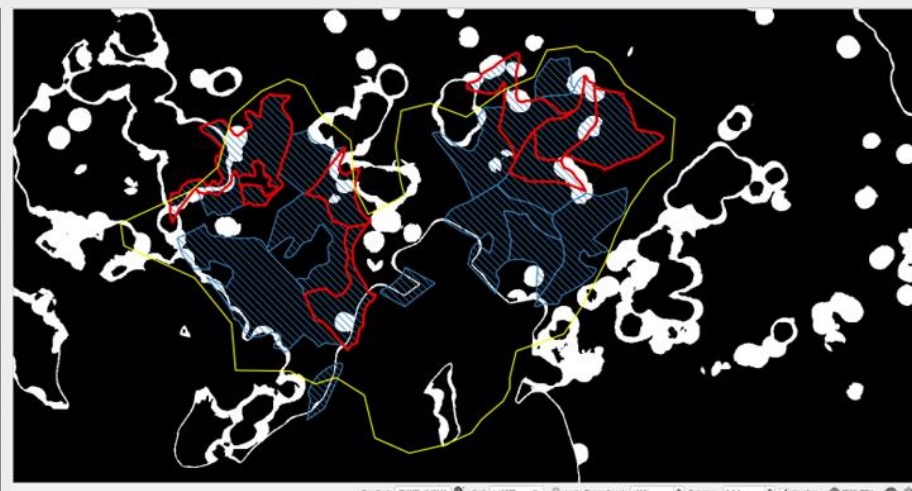
Other useful information can be obtained **indirectly**

#### Factor E: large trees

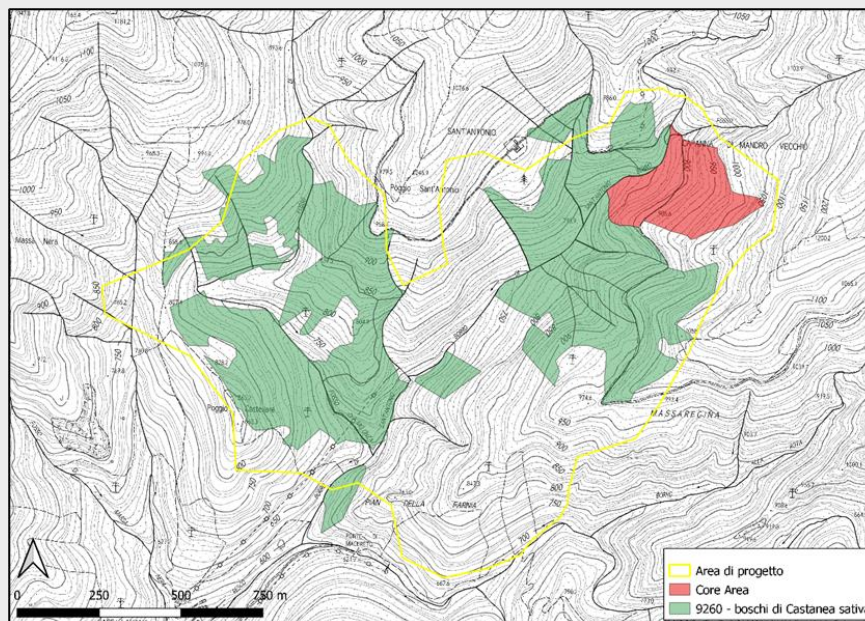


Analysis of LiDAR data; white color shows plants taller than 27 m, and likely to have a DBH greater than 67.5 cm

#### Factor G: open areas



Analysis of LiDAR data; areas with red borders present good conditions in terms of forest cover openings



## Field surveys for the characterisation of Core Areas

Application of IBP surveys

- ✓ within the Core Areas
- ✓ in a buffer area (200 meters radius) outside them



## *IoS Requirements*

IoS must be identified within the Edge Area on the basis of 3 criteria:

1. belonging of the forest population to the **target forest habitat**
2. **high level of potential biodiversity** (current or attainable)
3. **functional distance** between the elements of the network

## *IoS number, dimension and position*

## *Field surveys for the characterisation of IoS*

1. Dendrometric survey
2. Index of Biodiversity Potential (IBP)

## *IoS Requirements*

IoS must be identified within the Edge Area on the basis of 3 criteria:

### 1. belonging of the forest population to the **target forest habitat**

This condition can be proven by analysing the following documents:

- ✓ Official map of Natura 2000 habitat types
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#### **NOTE**

- ✓ **Strong habitat fragmentation:** in order to ensure the functionality of the ecological network IoS can be exceptionally distributed even in forest areas not belonging to the target habitat
- ✓ **AVOID artificial populations**

## *IoS Requirements*

IoS must be identified within the Edge Area on the basis of 3 criteria:

### 2. high level of potential biodiversity (current or attainable)

#### **HIGH SCORES of IBP factors:**

- C – large standing deadwood
- D – large laying deadwood
- E – large living trees
- G – open ares

#### **Conservative IoS**

Do not require particular interventions



#### **Improved IoS**

Require improvement interventions



## *IoS Requirements*

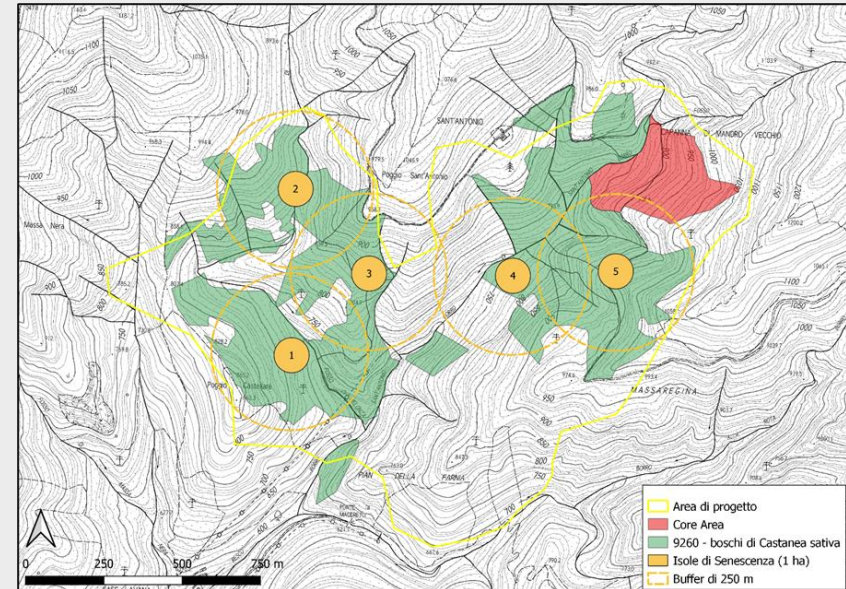
IoS must be identified within the Edge Area on the basis of 3 criteria:

### 3. **functional distance** between the elements of the network

**Distances** between elements are based considering the **movement range of species that have less spreading capacity** such as some invertebrates

## *IoS number, dimension and position*

1. N° of IoS of (minimum) 1 ha to cover **5% of the EA**
2. Position based on distance of **200/300 m** between one and the other



# PROTOCOL FOR THE IDENTIFICATION OF ISLANDS OF SENESCENCE

## Field surveys for the characterisation of IoS

1. Dendrometric survey

2. Index of Biodiversity Potential (IBP)

### OBJECTIVE

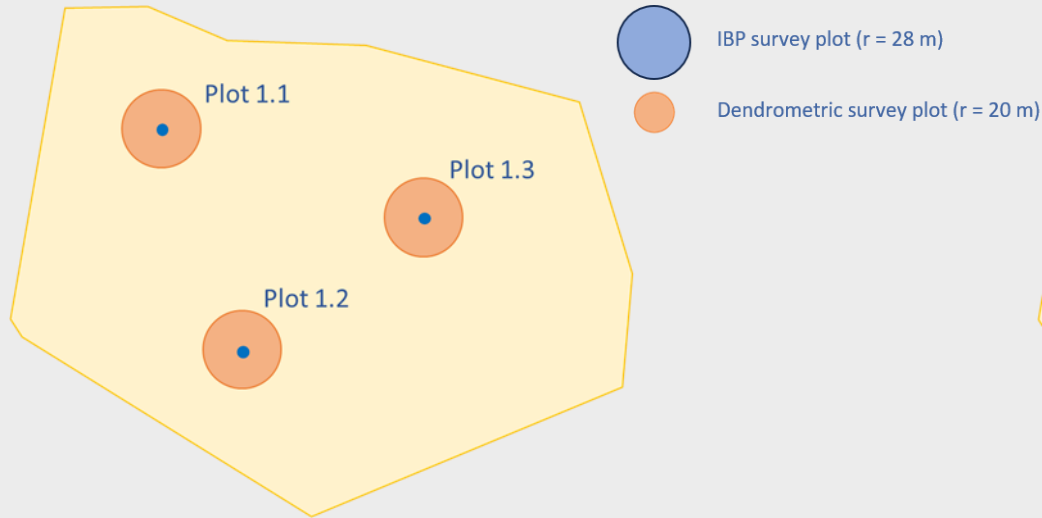
collect information needed for the planning of the interventions

	Factors to sample	Extractable information	Use of Information
<b>Dendrometric survey</b>	DBH Height Dendrotype Species	volume/ha	calculation of the amount of dead wood to be released (about 10% of the living mass)
		diameter distribution	Identification of the (actual or future) largest trees to be preserved for the future
		density (n. trees/ha)	useful for the characterization of the IoS, but not considered in the planning of the interventions
		specific composition	
<b>IBP survey</b>	A: Native species	specific composition	useful for the characterization of the IoS, but not considered in the planning of the interventions
	B: Structure	forest stratification	
	C & D: Standing and laying deadwood	quantity and distribution of dead wood	calculation of the amount of dead wood to be released (about 10% of the living mass)
	E: Large living trees	quantity and distribution of large trees	Identification of the (actual or future) largest trees to be preserved for the future
	F: TreMs-bearing living trees	frequency and variability of TreMs	Identification of actual and future habitat trees
	G: Open areas	extension and distribution of open areas	calculation of the amount of surface of open areas, necessary to reach an extension between 1 and 5% of the IoS surface area
	H: Time continuity	time continuity of the forest	useful for the characterization of the IoS, but not considered in the planning of the interventions
	I : Aquatic habitats	presence of aquatic habitats	
	J: Rocky habitats	presence of rocky habitats	



# PROTOCOL FOR THE IDENTIFICATION OF ISLANDS OF SENESCENCE

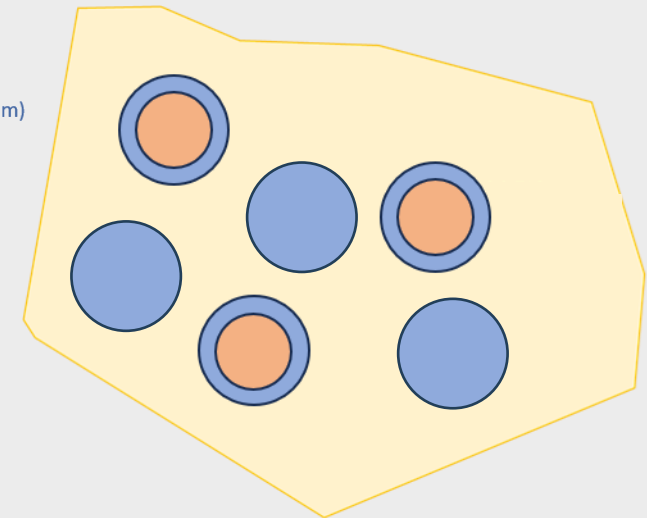
## Dendrometric survey



Example for a IoS of **3,2 ha** of surface (1 plot/ha)

- ✓ Radius: 20 m (1256 m<sup>2</sup>)
- ✓ 1 survey plot per IoS hectar
  - Species
  - Dendrotype
  - DBH
  - Height (20%)

## IBP



Example for a IoS of 3,2 ha of surface (50% of the IoS area)

- ✓ Radius: 28 m (2463 m<sup>2</sup>)
- ✓ Suggested at least 50% of the IoS surface

IoS surface (ha)	Plot radius (m)	Plot surface (m <sup>2</sup> )	50% of IoS surface (m <sup>2</sup> )	N° of IBP plot
1	28	2463	5000	2
1,5	28	2463	7500	3
2	28	2463	10000	4
2,5	28	2463	12500	5
3	28	2463	15000	6



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**And now let's go  
from theory to practice!**

**Thank you  
for your attention**