

# Socio-economic impact of the LIFE project SelPiBioLife



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## SelPiBioLife project

The Project LIFE13 BIO/IT/000282 (*Innovative silvicultural treatments to enhance soil biodiversity in artificial black pine stands*) aims to demonstrate the positive effects of innovative forest management practices on black pine forests' multifunctionality.

### Reference

LIFE13  
BIO/IT/000282

### Duration

5 years  
02-JUN-2014 to  
31-MAY -2019

### Budget

Total budget  
1,549,975.00 €  
EU contribution  
768,594.00 €

### Location

Italy  
(Tuscany)



## Background: Black pine stands management in Appennine



Black pine stands were, in general, established throughout the Apennines after the World Wars with the purpose of re-establishing forest cover in marginal and eroded soils. Today the key functions is the **protection against soil erosion** and the **hydrological regulation** of catchments.



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## Background: Black pine stands management in Appennine

In Italy, black pine and calabrian pine forests cover nearly **236.467 hectares** (23% of the total area covered by conifers). Pine stands are often **degraded** representing the most simplified forest systems in Italy.



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# The problem to solve: how to manage black pine stands

At today the management of black pine stands is finalized at increasing and guaranteeing the **multifunctional** and **sustainable** role of these stands.

It is necessary to establish and realize a series of silvicultural treatments finalized to guide natural evolution to **more complex** and **stable systems**.

In this phase the role of **thinning** is crucial.

Forest management must take into account the **relationship between silvicultural treatments and ecosystem services** provided by forests.



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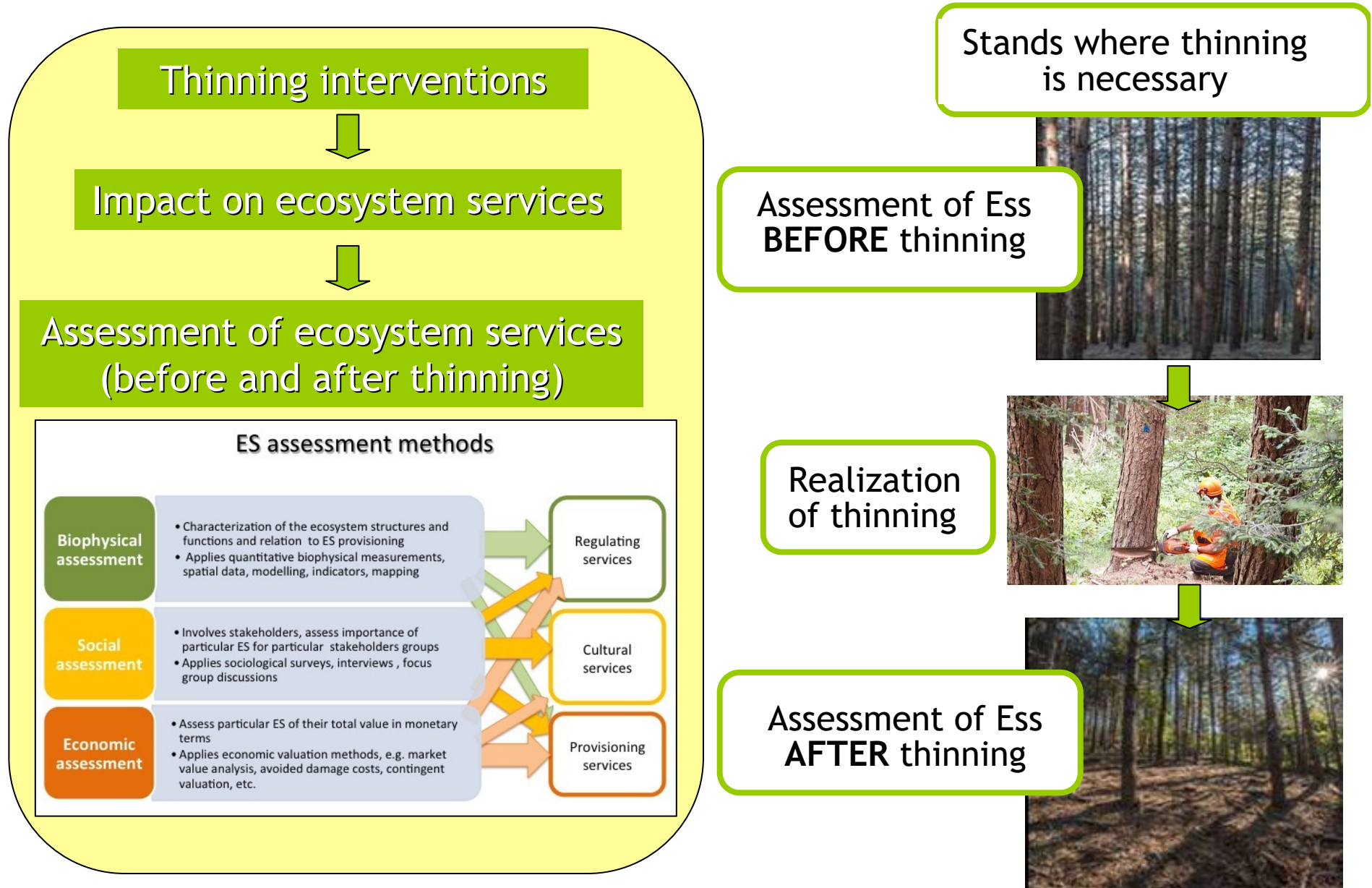
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# The approach: management of the stands reaching equilibrium among ESs





# The approach: assessment of ecosystem services before and after silvicultural treatments

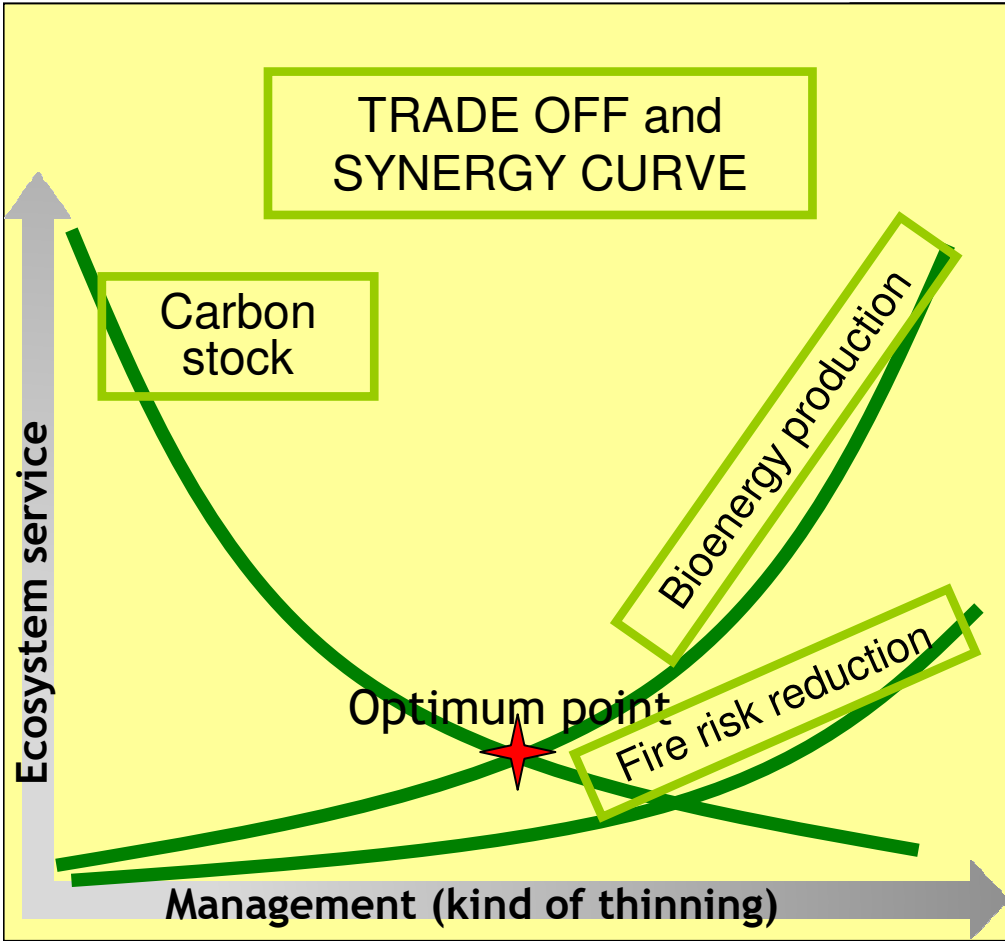






# The approach: trade-off and synergies analyses

ESs are assessed comparing different silvicultural system and ante/post stands situations



ECOSYSTEM SERVICE	INVESTIGATED COMPONENT	TRADITIONAL THINNING	SELECTIVE THINNING
BIOMASS PRODUCTION	HARVESTED WOOD		
	PROFIT FROM CHIPS		
HABITAT PROVISION	DEADWOOD TREES		
	DECAYED LOGS		
CLIMATE CHANGE MITIGATION	C STOCK		
	CO2 EMISSION REDUCTION POTENTIAL		
RECREATION	PREFERENCE FOR THINNING		



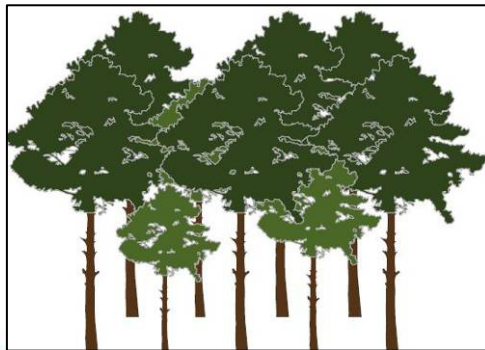


# Three silvicultural treatments are compared

Control



No intervention is realized



Traditional thinning



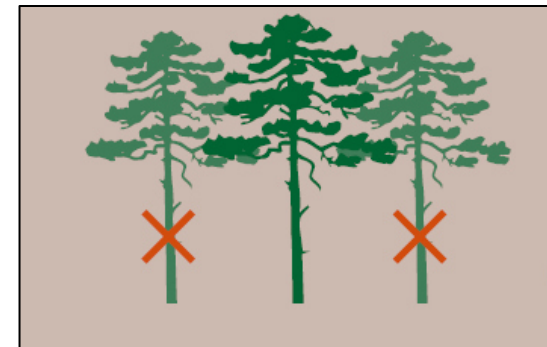
Dominated trees are removed.  
No significant effect on canopy cover.



Selective thinning



Selection of 100 candidate trees per hectare and removal of direct competitors.



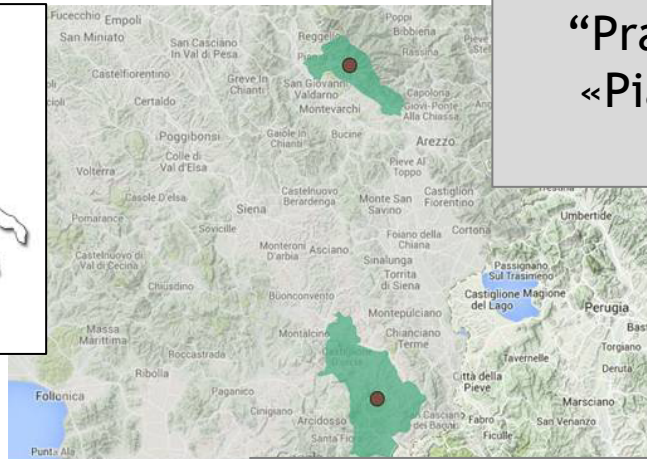
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# Monitoring areas and experimental scheme



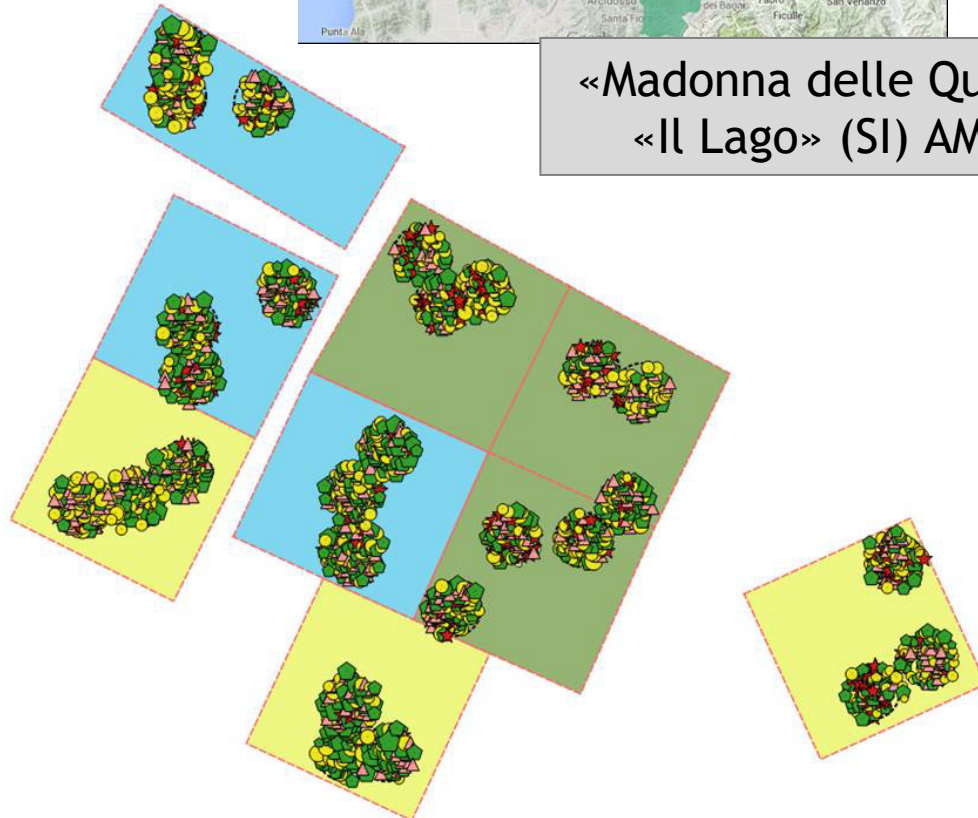
“Pratomagno- Valdarno”-  
«Pian della cucina» (AR)  
PRATOMAGNO

9 areas (1ha each) for each experimental site, with 3 replicates of each silvicultural thesis

«Madonna delle Querce» -  
«Il Lago» (SI) AMIATA



3 plots (10 m diameter - 314 mq) for each area were selected for sampling and three thesis applied



- ✓ selective thinning
- ✓ traditional thinning
- ✓ control

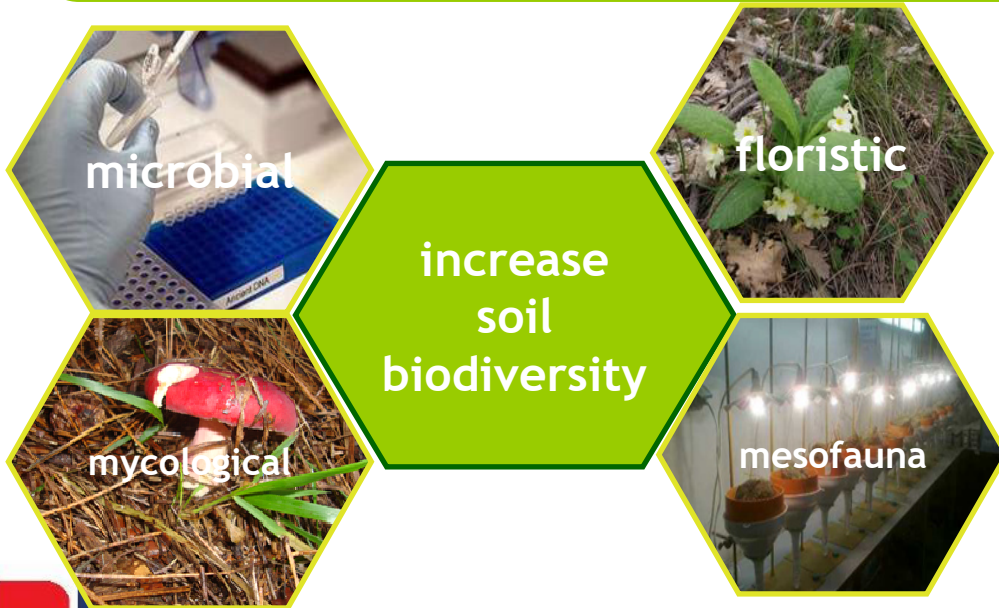
**A total of 27 plots for each site**



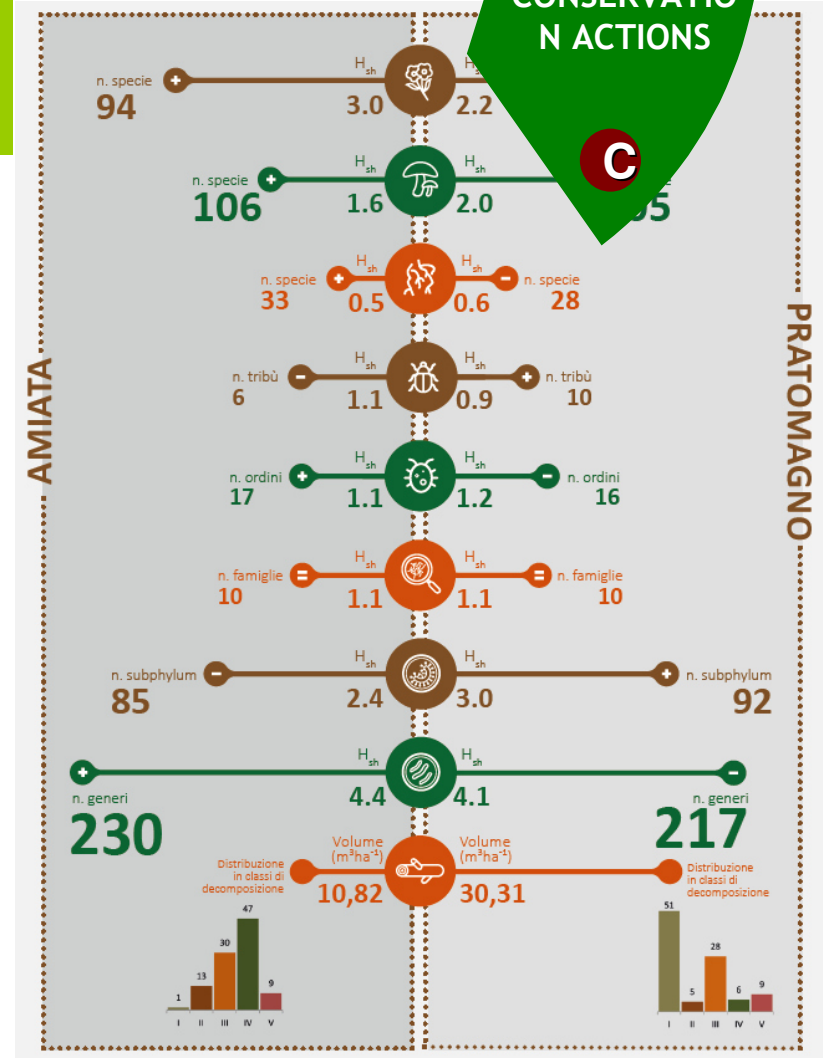
# SelPiBioLife: ecologic impact

Value of supporting services (BIODIVERSITY) before and after thinning in the study areas

**Biodiversity measurements before and after thinning.**  
**Number of species and Shannon index for component.**



**CONCRETE CONSERVATION ACTIONS**



# SelPiBioLife: economic impact

Value of provisioning services (WOOD PRODUCTION) before and after thinning in the study areas

CONCRETE CONSERVATION ACTIONS

C



The volume of harvested trees was quantified using volume tables for black pine, considering the harvesting rate applied with the traditional and selective thinning

	Volume before thinning (m <sup>3</sup> ha <sup>-1</sup> )	Harvested volume (m <sup>3</sup> ha <sup>-1</sup> )	Timber (roundwood + poles)	Woodchips
<b>Amiata study area</b>				
Traditional thinning	362.9	67.3	0% (68%)	100% (32%)
Selective thinning	456.6	137.4	0% (74%)	100% (26%)
<b>Pratomagno study area</b>				
Traditional thinning	721.1	139.6	70% (75%)	30% (25%)
Selective thinning	586.6	173.9	78% (79%)	22% (21%)

The proportion of different wood assortments (e.g. roundwood, poles and woodchips) were estimated by means of a local assortment table. Finally, a check between the proposed assortments (potential) and those effectively sold by the forest enterprise in charged for timber harvesting (realised) has been done.

**Table 1.** Provisioning services before and after thinning in the two study area. The potential percentage of wood assortment is reported between brackets.

# SelPiBioLife: socio-economic impact

Value of cultural services  
(RECREATIONAL VALUE) before and  
after thinning in the study areas

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June - September 2017: **face-to-face administration** of the questionnaire to **200 visitors** of Pratomagno forest

Semi-structured questionnaire formed by 15 questions (2 open-ended and 13 closed-ended questions) divided in 4 thematic sections.



“Personal information”

“Recreational use of forest”

“Preferences and perceptions towards the Pratomagno forest landscape”

## TRAVEL COST METHOD

The TCM is based on the assumption that costs which people incur during their trip to a recreation site represent a proxy of the value of the site. The main assumption of the travel cost method (TCM) is that the frequency of trips to a recreation site decreases as the travel distance increases.



# SelPiBioLife: socio-economic impact

Value of cultural services  
(RECREATIONAL VALUE) before and  
after thinning in the study areas

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AREA	DISTANCE (km) FROM THE AREA	MEAN COST (€)	NUMBER OF VISITS	RESIDENTS	k (VISITE/1000 INH)
Area 1	15	2.07	904.02	8514	106.18
Area 2	25	7.75	2996.18	76700	39.06
Area 3	30	18.90	1110.65	59665	18.61
Area 4	70	43.4	129.14	575754	0.22

## ZONED TRAVEL COST METHOD

The zoned travel cost method (ZTCM) involves using survey data from people living in predefined zones based on different distances from their homes to a recreation site. The cost of trips from all points in a given zone is assumed to be constant and the values that people hold for the site are elicited based on the predefined zones they belong to.



# SelPiBioLife: socio-economic impact

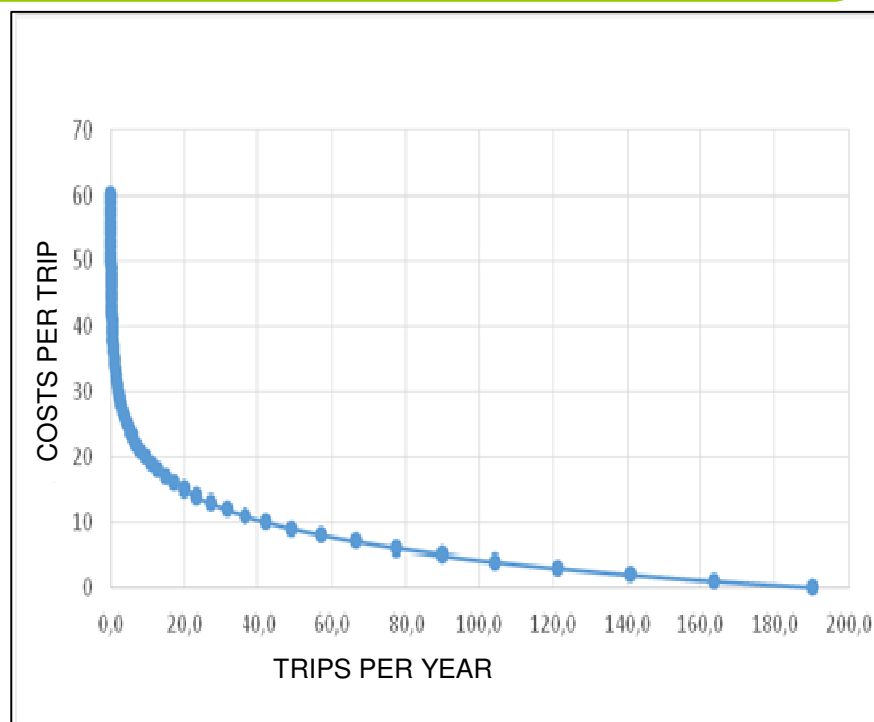
Value of cultural services (RECREATIONAL VALUE)  
before and after thinning in the study areas

Total travel cost curve for recreational trips  
to recreation area

CONCRETE  
CONSERVATION  
ACTIONS

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The recreational  
value of the area is  
**1268,08 € / year**



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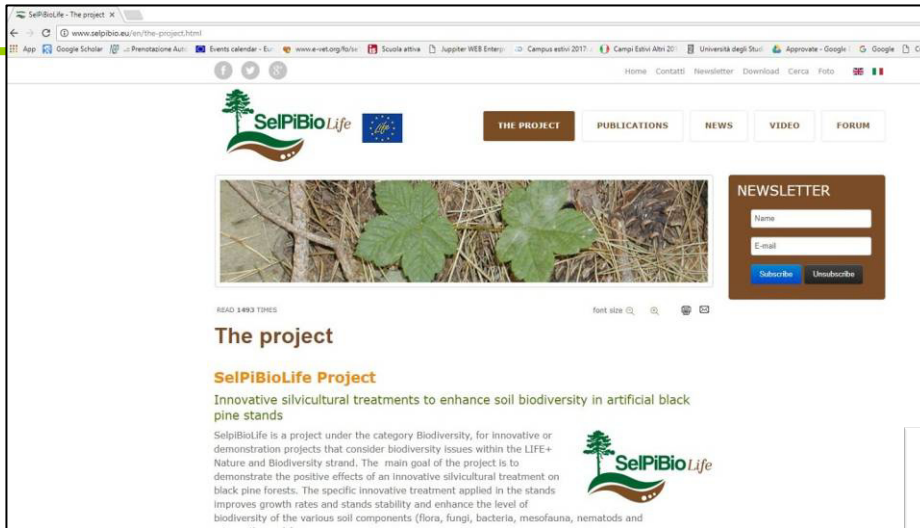


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# SelPiBioLife: social impact

Project's website: [www.selpibio.eu](http://www.selpibio.eu)



Technical handbook In Italian, English and Spanish



Project's Infographics



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# SelPiBioLife: social impact



Brochure



...accrescere la diversità micologica

AREE DIMOSTRATIVE  
Pratomagno (AR)  
Monte Amiata (SI)

LIFE 14 CAP/HR/000014  
Progetto di ricerca  
di gestione forestale  
LIFE

www.selpibio.eu

Il Progetto SelPiBioLife per...  
...la gestione delle pinete  
artificiali di pino nero

**GESTIONE DELLE PINETE ARTIFICIALI DI PINO NERO**

Il Progetto propone un trattamento selvicolturale basato sul "diradamento selettivo", ovvero una tecnica di scelta e allevamento delle piante di maggior sviluppo potenziale. Attraverso specifiche azioni verranno mostrate le modalità di intervento (dalla martellata all'estirpazione) e verificati i benefici su accrescimento delle piante, stabilità dei popolamenti e biodiversità.

Obiettivo non secondario sarà dimostrare la semplicità di realizzazione degli interventi proposti e la possibilità di replicarli in formazioni analoghe sia pubbliche che private.

Prima e dopo gli interventi, verranno svolti dei rilievi per conoscere la variazione di:

- parametri dendrometrici e strutturali del popolamento;
- caratteristiche del legno morto.

...ACCREScere LA DIVERSITÀ MICOLOGICA

...al livello di luce ed acqua, provocata dai interventi invasivi dei diradamenti, implica un aumento della biodiversità micologica. Il progetto è quello di rilevare i luoghi (anche conosciuti) dove il diradamento applicato ha effetti positivi per conoscere

Video

I diradamenti selettivi nel Progetto SelPiBioLIFE



I diradamenti selettivi nel Progetto SelPiBioLIFE

# SelPiBioLife: social impact

## Technical meetings



## Networking







*Thank you*