Section 1

The questionnaire was administrated to users, who were shown photos to illustrate the selected management approaches (coppice, conversion to high forest and natural evolution). Here is an example related to the district of Alberese.

WTP for recreational activities in the district of Alberese (Gr) with consideration of different forest management options

1. Age

- o   18-35
- o   36-50
- o   51-65
- o   > 65

2. Gender

- o   Male
- o   Female

3. Level of education

- o   Master of science
- o   High school
- o   Secondary school
- o   Primary school

4. Occupation

- o   Student
- o   Retired
- o   Housekeeper
- o   Employee
- o   Self-employed

o   Other:

5. Postcode

6. Accommodation type

- o   Hotel
- o   Bed and breakfast
- o   Agritourism
- o   Camping
- o   Nothing (daily trip)
- o   Other:

Brief information on forest management

Forest management is mainly based on:

- <u>Coppice</u> = After cutting, stumps (lower parts of the tree) generate new plants through the emission of several shots via an agamic process.
- <u>High forest</u> = Higher plants than coppice, with one trunk. The forest is renewed from the seeds of pre-existing trees or from artificial plantation.

In this area, there are three different management options for coppice.

a) Coppice
b) Conversion to high forest
c) Natural evolution of coppice

In line with the agricultural policy measures of the European Community, financial contributions are made to those farmers and those entities involved in the maintenance and preservation of agro-forestry territory according to sustainable forest management criteria. The benefits provided by forests are timber production, soil protection, water regulation, landscape function, maintenance of biodiversity, etc. One of the main functions concerns tourist/recreational activities, such as trekking, mountain biking, hunting, birdwatching and mushroom picking. However, the only function that can generate revenues is often related to the production of timber: if the revenues produced by this activity do not cover management costs, there is a risk of abandoning the forest and consequently compromising all the functions listed above.

Photos of the three management options
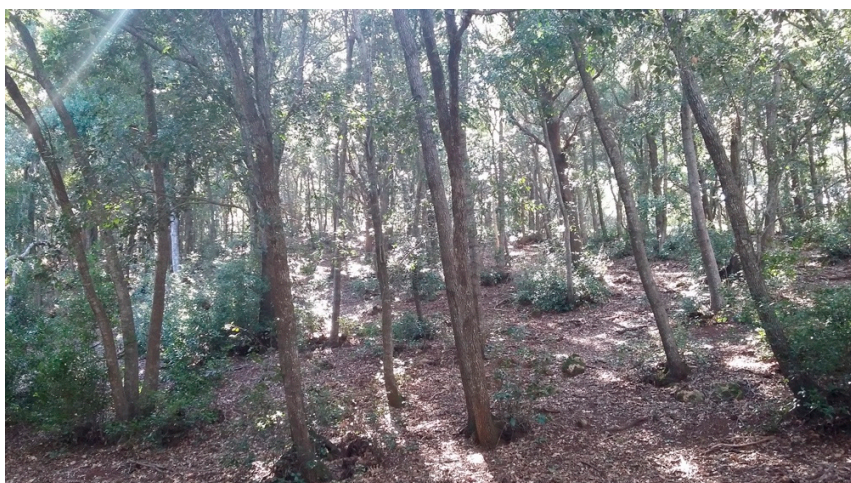

Figure a) Coppice

Figure b) Conversion to high forest

Figure c) Natural evolution of coppice

WTP for recreational activities with consideration of different forest management options

The hypothetical scenario included a supplement to income tax at a regional level, that is, the payment method by which we expected them to pay for maintaining the recreational value of the forest area.

0€	2€	4€	6€	8€	10€	12€	14€	16€	18€	20€	22€

a) Coppice

b) Conversion to high forest

c) Natural evolution of coppice

Section 2

ROS aim to divide a territory in urban, rural and natural areas. This methodology applied to Tuscany is defined as follows.

Urban Areas (A_u)

Urban areas are the areas in which colonization of the natural environment is maximum; the land-use in these areas is prevalently urban and urban streets:

- • S_u – Artificial Surfaces
- • C_a – Inhabited Centers
- • St_u – Urban Streets

Formula 1 synthesizes the definition of the urban area at the map level. The whole "urban area" (A_u) is defined by the territorial j-units belonging to the respective artificial surfaces (S_u) and corresponding, within the Corine Land-Cover, to the urbanized zones of residential land-use, the industrial zones, the commercial and infrastructural zones, the mining areas, the construction sites, to landfills and abandoned land, the green spaces, and artificial non-agricultural land. Furthermore, urban centers not included in the latter category (C_a) and urban streets (the streets that are of the latter category (St_u)), belong to the urban area.

$$A_u = \{A_j \mid A_j \in S_u \cup C_a \cup St_u\} \qquad\qquad [1]$$

Where A_u = urban area, A_j = analyzed territorial j-unit, S_u = artificial surfaces, C_a = inhabited centers, St_u = urban street = $(St \cap S_u) \cup (St \cap C_a)$

Rural (anthropic) areas (A_a)

Colonized areas, include the parts close to urban centers, and all the non-urban areas in the vicinity of inhabited centers, as well as the roads and adjacent non-urban areas:

- • S_a - Agricultural surfaces outside urban areas
- • $C_{abuffer}$ - Buffer areas around inhabited centers (but outside these centers)
- • St_a – Rural streets; i.e. all streets excluding urban streets.
- • $St_{abuffer}$ - Buffer areas around rural streets excluding the ones inside urban areas.

Formula 2 synthesizes the definition of rural area (area with medium human presence). The group "large area with medium human presence" (A_a) is given by the territorial J-units belonging to the agricultural surfaces located in the urban areas (S_a). These areas correspond, in the official Corine Land Cover, to the arable lands, under permanent crops, the meadows (permanent grassland), and heterogeneous agricultural areas. Furthermore, the areas in the vicinity and outside the urban centers ($C_{abuffer}$), the rural streets (St_a), and the areas next to the rural streets and outside the urban areas ($St_{abuffer}$), are also considered belonging to the large area with medium human presence.

$$A_a = \{A_j \mid A_j \in [S_a \setminus (S_a \cap A_u)] \cup [C_{abuffer} \setminus (C_{abuffer} \cap A_u)] \cup St_a \cup [St_{abuffer} \setminus (St_{abuffer} \cap A_u)]\}$$
$$[2]$$

Where A_a = rural area, A_j = Analyzed territorial j-unit, A_u = Urban area, S_a = Agricultural surfaces outside urban areas, $C_{abuffer}$ = Areas included 500 meters around the municipal main town and 1 Km around the provincial main town, St_a = Rural streets = St \ St_u, $St_{abuffer}$ = Areas included 500 meters around the streets.

Natural areas (low human presence) (A_n)

Include all the areas excluded in the precedent groups: mainly the rural natural areas, and non urban areas distant from inhabited centers and roads" network:

• S_n – Remaining part of the territory: all the natural surfaces outside urban areas and outside the rural areas.

Finally, the large area with minimal human presence is synthesized in formula 3. In formula 3 the group "large area with minimal human presence: i.e. the rest of the territory" (A_n) is represented by the territorial J-units belonging to the rest of the territory. In other worlds, this includes all the surfaces outside the urban areas, and the rural areas. These areas correspond, in the official Corine Land Cover, to the wooded areas, the areas with shrubs, the open areas with sparse or no vegetation, to wetlands and water bodies.
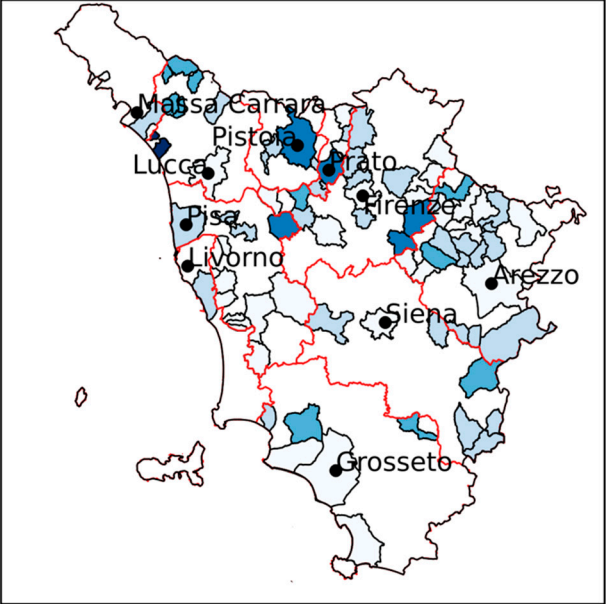
$$A_n = \{A_j \mid A_j \notin (A_u \cup A_a)\} \qquad [3]$$

Where A_n = natural area: i.e. the rest of the territory A_j = Analyzed territorial J-unit, A_u = Urban area, A_a = Rural area
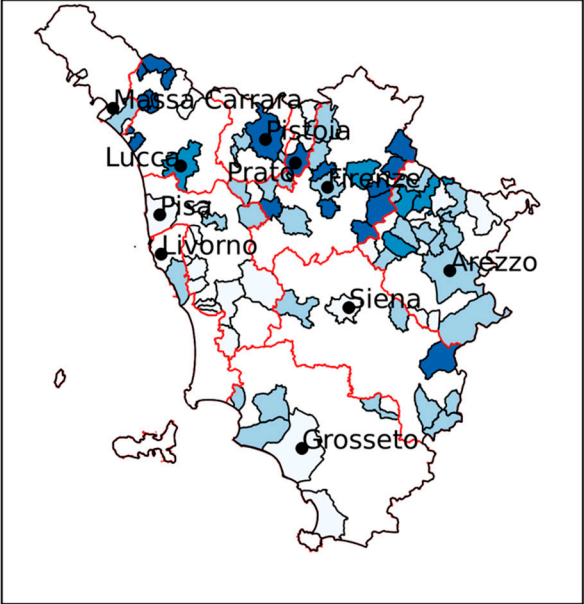
Section 3

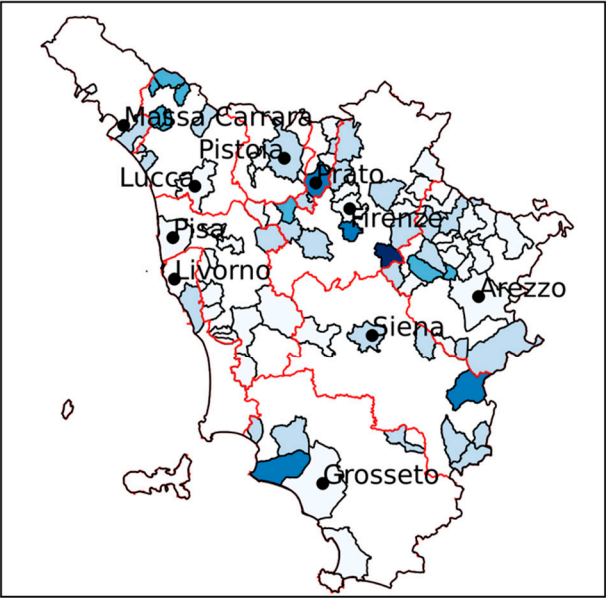Spatial distribution of WTP for the three management system of coppice forests in Tuscany according to the postal code of residence of the respondents.