HERITAGE INTERPRETATION AND LANDSCAPE CHARACTER IN THE FORESTRY DISTRICT OF SERRA SAN BRUNO (CALABRIA, ITALY)

SALVATORE DI FAZIO¹, LUIGI LAUDARI¹, GIUSEPPE MODICA¹

¹ Mediterranea University of Reggio Calabria, Department of Agroforestry and Environmental Sciences and Technologies (DiSTAfA) – Località Feo di Vito – 89122 Reggio Calabria, Tel +39 0965 312681. salvatore.difazio@unirc.it;¹ L. Laudari, luigi.laudari@unirc.it;¹ G. Modica, giuseppe.modica@unirc.it.

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ABSTRACT The research presented in this paper was aimed at the characterization, interpretation and valorisation of the forestry landscape in a representative mountainous region of Southern Italy, located in the centre of Calabria (Italy). The integrated valorisation of the forestry resources and landscape was proposed for the development of youth tourism experiences based on environmental education. The traditional charcoal-production sites, where many vertical mound charcoal-kilns are still present and active, were chosen as the main interpretive key of the local landscape; they were linked logically and physically to the other territorial signs documenting the old monastic civilization, and to the main elements of the water-wood system and industrial archaeology (watermills, old iron factories and hydroelectric power stations, etc.). On the basis of a dedicated GIS implemented for landscape resource analysis and management, a network of Heritage Trails was defined so as to emphasise and actualize the multifunctional use of the forestry land in the area. The Heritage-Trail System proposed is the starting point for the design and creation of a thematic Wood and Water Ecomuseum in the study area, thus increasing awareness and participation in landscape valorisation on the part of the local community.

Keywords: Heritage trails; Landscape character; Tourism valorization, GIS.

INTRODUCTION Today in Italy the importance of the environmental function of agriculture and forestry is particularly emphasized. The dramatic landslides recently occurred in Calabria and in other mountain areas, characterized by progressive depopulation and abandonment of agriculture and forestry, have contributed to increase the public awareness on the matter. Landscape analysis and characterization are key and basic elements for the interpretation, management, protection and valorisation of a given territory. Over the last three decades, in the rural and forestry space, which today are seen as spaces of both labour and recreation, the need to define integrated infrastructure networks has become more and more urgent, particularly in protected areas. Tourism on the one hand, can offer the local population of mountain areas new economic opportunities that traditional and still present activities, such as charcoal production, cannot give any longer; on the other hand, it can also contribute to sustain them. For
example, the various phases of construction and the characteristic operations of the mound kiln technique need an intensive labour that make the whole charcoal-production process obsolete in industrialized countries (Schenkel et al., 1998). In recent years, charcoal production, as well as many other traditional industries, have assumed great cultural and educational significance but are inevitably disappearing, due to the lack of competitiveness in the global market. Until the 1950s, in Calabria, in the mountains of the Serra San Bruno district, the production of charcoal was one of the main economic activities. Today in this area the old production methods still survive and five specialized concerns keep on producing charcoal according to century-old techniques which show great scientific, cultural and tourism interest. In view of the development of environmental education and youth tourism programmes related to the sustainable use of resources and energy production in areas of great environmental value, charcoal production sites can be seen as a link-element in the narration of the landscape, allowing to connect both production and environmental aspects.

MATERIALS AND METHODS In order to favour the development of youth tourism experiences based on environmental education in the Serra San Bruno district, the research has been focussed on the networking connection and valorisation of the resources composing the local forestry landscape. In particular, forestry heritage has been meant as “woodland ecosystem”, considered as both a complex resource of high natural interest and a place of human activities which have taken advantage of it and have left a multitude of territorial signs, such as many monuments of industrial archaeology. To this end, the charcoal-production sites, where the traditional mound charcoal-kilns are still present, have been linked – logically and physically - to the many territorial marks documenting the monastic tradition, as well as to the main elements of the water-wood system. The planned trails and interpretive centres help discover forestry heritage both as a whole - i.e. as an ecosystem in its complexity – and as a place where various specific elements interact in a way that may result balanced or unbalanced. Attention is focussed on those buildings and structures documenting historic industrial activities strongly dependent on the forestry resources: watermills, ironworks, hydroelectric power stations, etc. It has been tried to enhance those forestry resources and activities, which largely concern the life of the population and yet are marginal today, by inserting the fruition and visit experiences in the well-established thematic routes of religious and cultural tourism, by identifying new itineraries and by defining specific infrastructures and local facilities. Furthermore, this tourist exploitation, carried out through fruition forms respectful of local culture and identities, can be a chance of revitalization and can lead to the construction of structures and networks of cooperation within the local community. The specific target of this project is therefore the definition of a logical scheme for the connection and integrated use of the various heritage resources. In a first phase, the heritage resources were surveyed and mapped, and then they were analysed, catalogued and characterized. Later on, they were mapped and georeferenced within a dedicated GIS. A series of interconnected thematic tourist routes was defined, each route corresponding to a one-day visit experience and organized according to a ring model where the start and arrival points coincide (fig. 3). For each route, in relation to the various target visitor groups, the technical characteristics of the supporting road/pathway network were analyzed so as to verify the accessibility of the sites (fig. 4). A logical and organizational scheme shows the different theme/routes mutual connections, the cultural heritage characterizing them and the main visit/cultural facilities characterizing the visit
experience, e.g. visitor and information centres (Hough, 1984; Dower et al., 1996; Di Fazio et al., 2005).

**Study area** The design proposal was developed in an area of the so-called Serre, a mountainous region located in the centre of Calabria (South of Italy) and including the territory of four municipalities: Serra San Bruno, Mongiana, Stilo and Bivongi (fig. 1). This is one of the most interesting areas of Calabria because of the presence of many heritage resources of great natural, historic and architectural interest. Nevertheless, owing to its century-old woods, characterized by the prevalence of beech (*Fagus sylvatica* L.) and silver fir (*Abies alba* Miller subsp. *apennina* Brullo, Scelsi and Spampinato) population, it shows a remarkable intrinsic suitability for forestry. For centuries, the forests were owned by the Charterhouse of Serra San Bruno, founded by St Bruno of Cologne in the 11th century, and managed efficiently and sensitively according to the methods of the Carthusian monks. The high environmental value of this area motivated the institution of two National Natural Reserves (now SCIs - Sites of Community Interest - of the Natura 2000 network, the centrepiece of EU nature and biodiversity policy) and of the *Serre Regional Park* in 2004 (tab. 1). The local industrial archaeology heritage is also very significant. It is related to the utilization of water and wood and dates back to the 18th-19th century, i.e. the period when Calabria was under the Bourbon domination. Worth-mentioning, in the same area, are the many historic monastic complexes, some of which are still inhabited by the original religious orders, either Catholic or Greek-Orthodox. They transferred in the area not only the religious culture, but also technological knowledge, thus becoming centres of cultural irradiation and civilization.

<table>
<thead>
<tr>
<th>Name of the protected area</th>
<th>Year of designation</th>
<th>Type</th>
<th>Surface [ha]</th>
<th>Perimeter [km]</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Serre</em> Regional Park</td>
<td>2004</td>
<td>Regional Natural Park</td>
<td>16792.8</td>
<td>153.5</td>
</tr>
<tr>
<td><em>Santa Maria</em> Wood</td>
<td>1995</td>
<td>SCI type B</td>
<td>806.4</td>
<td>12.7</td>
</tr>
<tr>
<td>Marchesale</td>
<td>1995</td>
<td>SCI type B</td>
<td>608.1</td>
<td>14.2</td>
</tr>
<tr>
<td>Lacina</td>
<td>1995</td>
<td>SCI type B</td>
<td>326.3</td>
<td>11</td>
</tr>
<tr>
<td><em>Stilo</em> Wood – <em>Archiforo</em> Wood</td>
<td>1995</td>
<td>SCI type B</td>
<td>4703.9</td>
<td>35.6</td>
</tr>
<tr>
<td>Stilaro Valley</td>
<td>1995</td>
<td>SCI type B</td>
<td>647.7</td>
<td>32.8</td>
</tr>
</tbody>
</table>

For a first investigation of the tourist potentials of the area, the accommodation facilities and the tourist flows in the municipality of Serra San Bruno were surveyed. About 100000 tourists per year are recorded; around 40000 of them visit the Museum of the Charterhouse. The highest tourist flow is recorded in April and May, due to the presence of many students and of German religious tourists who come to visit the places of St Bruno of Cologne. The presence of German tourists causes another peak period in autumn. The accommodation potentials of the area are steadily growing, thanks above all to private initiatives supported by public interventions financed by European Support Funds. In just the municipality of Serra San Bruno the accommodation capacity is about
180 bed-places. A significant number of houses are unoccupied (1285 in 2001, that is, 34.4% of the total) and many of them are let during summer for the so-called “tourism of return” and, to a lesser extent, for exogenous tourism (fig. 2). A thicker and even international network of cultural initiatives and facilities, addressed to school and youth tourism, would contribute to prolong the period of stay of the visiting groups and to widely enhance local resources, thus favouring a fruitful cultural exchange between the local population and visitors, particularly the youngest ones. Furthermore, it could support forms of short range local tourism with the purpose of environmental education and a consequent considerable socio-cultural impact on the wider regional community.

Figure 1. Location of the study area. The district of Serra San Bruno (Calabria, Italy).

Figure 2: Number of houses per typology of occupation in Serra S. Bruno municipality in 1971÷2001 period (source: ISTAT, Italian National Institute of Statistics).
RESULTS AND DISCUSSION The Main Visitor/Interpretation Centre was located in Serra San Bruno municipality so as to take advantage of the great attractiveness of the St Bruno Chartreuse, which is internationally renowned and is one of the main tourism destinations in Calabria since it is part of national and international religious tourism packages. Here the visitor can find information and can be introduced (through exhibitions, printed material, multimedia presentations, etc.) to the various themes of the integrated visit experience proposed. The Main Centre is also a node which links – logically and physically – the five thematic routes.

The thematic routes are based on the “nature-culture” and “nature-spirituality” combinations and can be described as follows. The technical and fruition characteristics of the pathway were defined for each itinerary in order to verify its intrinsic value and the degree of accessibility for the different visitors’ segments.

![Diagram](image_url)

Figure 3. Logical and organizational scheme interlinking the main cultural/natural heritage resources to favour their integrated tourism use in Serra San Bruno District.

1 - Charcoal itinerary: the thematic route focuses on the interpretation of charcoal production sites and, in particular, of the traditional vertical mound charcoal-kilns, made of wood logs and covered with straw and earth (fig. 5). In the dedicated interpretive centre, different materials and experiences help visitors understand the charcoal production technology and the related vernacular knowledge, local lifestyles and cultural traditions. By visiting the woods surrounding the small town of Serra San Bruno, step by
step, visitors can learn about the different functions of forest areas and see where and how the wood used in the charcoal kiln is produced; then they can experience how traditional kilns are built and know about the main utilizations of the charcoal produced (for example by tasting barbecued food or drawing with charcoal pastels).

2 - Spirit and Nature trail: the trail is supported by an already existing pathway, designed to favour a contemplative and spiritual experience by offering the visitors a simple and beautiful contact with nature, as well as by giving them the possibility to read some interpretive and spiritual texts presented in exhibition panels along the way. The main technical characteristics of this pathway are shown in fig. 4.

3 - Wood and Water itinerary: a pathway runs through the Ferdinandea forest (about 3500 hectares wide), so called because it once belonged to Ferdinand de Bourbon. The starting point is a historic building complex, also named Ferdinandea, composed of the Royal Summer Residence, the remains of the ancient iron foundry, an old hydroelectric power station. Then, walking through the woods, visitors can reach the Marmarico waterfalls with their 110 metre-high fall (one of the highest in Italy).

4 - Industrial archaeology itinerary: the route connects the ruins of the Mongiana Royal Foundry to a weapon factory of the Bourbon age. This old industrial building has been recently restored and opened to visit. After walking along a thematic pathway, tourists can reach the Allaro Valley where they can visit a number of old watermills, some recently restored.

5 - Monastic sites itinerary: this itinerary offers a series of “cultural bridges” connecting different sites of the historic monastic settlements in Calabria. The two main sites are the Charterhouse of Serra San Bruno and the Greek Orthodox monastery of St. John Therestis (the Harvester), both built in the 11th century. Tourists can further visit another
church of the same age, the Cattolica, in Stilo, or the *Our Lady of the Star* Hermitage and other ancient religious sites in the area.

The routes, designed and organised as described above, aim at enhancing forestry based resources, both cultural and natural in kind. They favour and support sustainable tourism and educational experiences having young students as their main target group. The itineraries will also contribute to implement a more general programme, recently outlined by some of the municipalities involved. It aims at the creation of strong tourism and of scientific and cultural poles based on the valorisation of biodiversity and on a spiritual experience in contact with nature, as St Bruno and the Basilian monks had foretold when they chose this area for the settlement of their communities.

Radius: ~ 5 m.
Height : ~ 4 m.
Length of traditional vertical mound charcoal-kiln’s building*: 7 days.
Length of carbonization**: ~ 20÷22 days.
Amount of wood employed: ~ 500÷600 q.
Amount of charcoal produced**: ~ 100 q.
Carbonization yields**: 20% in summer; 16,5% in winter.
Wood species employed: only from surrounding Holm oak (*Quercus ilex* L.) and Chestnut (*Castanea sativa* Mill.) coppices and Beech forests (*Fagus Sylvatica* L.).

* With two workers involved.
** Depending on wood moisture content, size of wood pieces, wood species, weather conditions, etc.

Figure 5. Main phases of the charcoal production cycle with traditional vertical mound (or earth) charcoal-kilns in the Serra San Bruno District and their major characteristics.

A relationship diagram of functional units was defined for the main interpretive centre (fig. 6). The centre is divided into five main functional spaces, which are distinguished but integrated: exhibition and seminariair spaces; spaces for active learning; staff spaces; visitors services.
Figure 6. Relationship diagram of functional units for the strategic design of the Interpretive and Environmental Education Centre of the Wood and Water Ecomuseum.

Didactic and learning spaces were divided into multimedia rooms and laboratories, also considering open-air equipped spaces as a natural extension. A similar criterion was adopted for exhibition spaces. “Connection spaces” link both the exhibition spaces and those spaces dedicated to the technical and scientific staff with the didactic and active learning spaces, thus highlighting, through a physical connection, the natural
interdependence between research, education-learning, socialization and recreation. Moreover, the centre “opens” to the territory, since it is symbolically and physically linked to the pathways developed within the thematic itineraries.

The *layout* can be physically expressed by a single building or by more buildings corresponding to the above-mentioned functional spaces. In the latter case, it would be suitable to reactivate through appropriate rehabilitation and conversion some of the many redundant historic buildings present in the region and scattered in areas of great environmental value (Bonfanti et al., 1996). Once subjected to preliminary functional and technical-structural tests, to verify the actual possibility to reuse them, these buildings can demonstrate the technology and uses of local woods, considering that for centuries the production of timber was one of the main economic activities of the area. Among the existing buildings, it would be advisable to privilege those which can better favour and stimulate the educational experience through their intrinsic characteristics, such as their symbolic value; the historic integration of the site; their relationship with the landscape; the sensitive use of local resources; the accessibility and interconnection with the infrastructural network and the other resources of the wood.

The scheme of spatial fruition of the territory was associated to a scheme of temporal distribution of the activities, according to the different seasonal cycles and to the requirements of a public mostly composed of young visitors and students. Fruition activities were scheduled distinguishing the different types (Thematic itineraries; Experiences; Courses and events) and the four main guiding themes (Water, Wood, Charcoal production sites and Industrial Archaeology) (Di Fazio et al., 2009a). Visit sections are organized for each of them and for the five defined thematic itineraries; tools for the interpretation of the resources were elaborated for each thematic itinerary (Di Fazio et al., 2009a). For instance, in the case of the valorisation of the charcoal production sites, the visit includes the possibility to experience a simple and immediate relationship with the resources of the wood and their uses by watching the construction and operation of the traditional mound charcoal-kiln. Furthermore, the visit of the charcoal production sites can be easily connected with that of the historic metallurgic industry sites, which needed the vegetal coal as a fuel with a high calorific value to be used to reach the melting point of metals. Finally, it is important to emphasize activities related to the interpretation of the historic and current lifestyles of charcoal burners, through the knowledge of specific cultural expressions (their huts, their tales and sayings, exhibitions of historic pictures, etc.). This can be done also through the direct involvement of charcoal burners, craftsmen and experts.

**CONCLUSIONS** This paper has shown an example of valorisation of a forestry district of great value, highlighting its multifunctional character as a productive place, a special context of environmental protection and a venue for cultural and recreational events. The proposal to develop experiences of environmental education and to equip the territory with infrastructures and facilities, able to adequately support them, emphasizes the peculiarities of the landscape seen as a dynamic expression of man-nature relationship. Moreover, it aims to confirm the mutual dependence and the need of a balanced integration between its multiple functions. The work here presented is part of a wider research for the definition of a *Water and Wood Ecomuseum* in the area of Serre Vibonesi. The Ecomuseum should further enhance the participative aspect and the valorisation of the diffused cultural and environmental heritage and of the specific local
identity. The starting point of this initiative is the valorisation of the territorial resources related to the nature-spirituality combination and this work represents the preliminary phase of detailed investigation of the forestry resources and landscape, of their interpretation and of the strategic organisation of itineraries which allow their interconnection and integrated fruition.

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REFERENCES


