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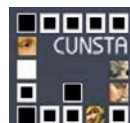
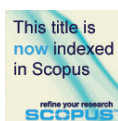
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The Charcoal Thematic Trail in the Nebrodi Mountains (Sicily) as a tool to recover the local Heritage Landscape

Gianni Petino*, Giuseppe Biazzo**

Abstract

The purpose of the article is to respond to the concept of Heritage Landscape, as both natural and cultural components are involved in it, combined in time and space. The result of this performative mixture can produce phenomena that can be considered repositories of shared values and memory for future generations. The objective of the study is to identify and propose the “Charcoal Thematic Trail”, a historical, cultural and natural trail within the Nebrodi Regional Natural Park in Sicily, based on the tradition of the charcoal maker’s trade and the charcoal production cycle. The motivations for the research are based on the definition of heritage and landscape that today are linked to the evolution of cultural itineraries, involving both local institutions and other components of civil society, to support cooperation and interaction for the creation of cultural and sustainable tourism

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Although the article is the product of all authors, i § 1, 4 and 5, included the maps and tables, are written by Gianni Petino; the § 2 and 3 are written by Giuseppe Biazzo.

offerings. The findings of the study are based on geo-historic literature, in-depth on field observations and some GIS applications. The observations suggest that the heritage landscape is an enabling medium through which traditional culture is preserved, local identities are transferred and rural heritage is acknowledged.

Lo scopo di questo articolo è quello di rispondere al concetto di *Heritage Landscape*, in quanto in esso sono coinvolte sia componenti naturali che culturali, combinate nel tempo e nello spazio. Il risultato di questa miscela performativa può produrre fenomeni che possono essere considerati depositari di valori condivisi e di memoria per le generazioni future. L'obiettivo dello studio è quello di individuare e proporre il "Sentiero tematico del carbone", un percorso storico, culturale e naturalistico all'interno del Parco Naturale Regionale dei Nebrodi in Sicilia, basato sulla tradizione del mestiere del carbonaio e sul ciclo di produzione del carbone. Le motivazioni della ricerca si basano sulla definizione di patrimonio e paesaggio che oggi sono legati all'evoluzione degli itinerari culturali, coinvolgendo sia le istituzioni locali che altre componenti della società civile, per sostenere la cooperazione e l'interazione per la creazione di offerte turistiche culturali e sostenibili. I risultati dello studio si basano sulla letteratura geo-storica, su osservazioni approfondite sul campo e su alcune applicazioni GIS. Le osservazioni suggeriscono che l'*heritage landscape* è un mezzo che consente di preservare la cultura tradizionale, trasferire le identità locali e riconoscere il patrimonio rurale.

1. *Introduction*

The creation of protected areas can unquestionably be considered the largest and most deliberate land use change in human history¹. According to the World Database on Protected Areas², protected natural sites must be framed in a minimum of six categories to be recognized by the International Union for Conservation of Nature³. Specifically, the categories we are referring to are highlighted by the Table 1; through this categorization, the blending of an area's natural and cultural components is evident. This condition highlights the need to focus attention on the ecosystem services of these areas, which increasingly tend to include both biodiversity conservation as well as public enjoyment⁴, with the goal of observing both nature and cultural legacy, as an exceptional product of "combined works of nature and man"⁵. These various interactions between humans and the natural environment are described as "clearly defined, recognized, dedicated and managed geographic spaces,

¹ Lean 2023.

² UNEP-WCMC and IUCN 2024.

³ Badman and Bomhard 2008.

⁴ Cassatella 2015.

⁵ UNESCO 1972.

through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values”⁶.

<i>Protected area categories reserve</i>	<i>Description</i>
Ia. Strict Nature Reserve	Protected area managed mainly for science, when it is an area of land and/or sea that possesses certain ecosystems, geological or physiological features, and/or exceptional or representative species, available mainly for scientific research and/or environmental monitoring
Ib. Wilderness Area	Protected area managed mainly for wilderness protection, when it is a large area of unmodified or slightly modified land and/or sea that retains its natural character and influence, without permanent or significant settlements, protected and managed so as to preserve its natural state
II. National Park	Protected area managed mainly for ecosystem protection and recreation, when it is a terrestrial and/or marine natural area designated to protect the ecological integrity of one or more ecosystems for present and future generations, to exclude exploitation or occupation contrary to the purposes of the designation of the area, and to provide a base or spiritual, scientific, educational, recreational and visitor opportunities all environmentally and culturally compatible
III. Natural Monument	Protected area managed mainly for conservation of specific natural features, when it is an area containing one or more specific natural or natural/cultural features that have exceptional or unique value because of their inherent rarity, representative or aesthetic qualities, or cultural significance
IV. Habitat/ Species Management	Protected area managed mainly for conservation through management intervention, when it is an area of land and/or sea that is subject to active intervention for management purposes to ensure the maintenance of habitats and/or to meet the needs of specific species
V. Protected Landscape/ Seascape	Protected area managed mainly for landscape/seascape conservation and recreation, when it is an area of land, with coast and sea, where the interaction between man and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity; the preservation of the integrity of this traditional interaction is critical to the protection, maintenance and evolution of such an area
VI. Managed Resource Protected Area	Protected area managed mainly for the sustainable use of natural ecosystems, when it is an area containing predominantly unmodified natural systems managed to ensure the protection and long-term maintenance of biological diversity while providing a sustainable flow of natural products and services to meet community needs

Tab. 1. Description of protected areas according to WDPA and OECM database (Source: our elaboration on UNEP-WCMC and IUCN data)

⁶ Badman and Bomhard 2008.

Cultural landscapes increasingly appear to spatially overlap or partially coincide with protected areas⁷, and this can be observed through the aforementioned categorization operated by the IUCN (2008). In particular, the category of Protected Landscapes/Seascapes, which consists of places where the interaction between humans and nature has produced natural values that are distinctive and ecologically, biologically, culturally, and scenically important, clearly shows an almost total synergistic overlap between culture and nature⁸. In fact, both protected area landscapes and cultural landscapes have many similarities because they both focus on human relationships with the natural environment over time. By combining biodiversity conservation and ecosystem integrity, human history, continuity of cultural traditions, and social values and aspirations, conservation approaches could benefit from this dual character⁹.

Conservation and management become challenging elements of the landscape debate because increasingly the landscape, understood as a common good, is characterized by an inherent vulnerability arising from being the property of everyone with the risk of being the property of no one, and its protection can only be found in forms of management capable of safeguarding the interests of the individual and at the same time of the community¹⁰. Article 1 of the Landscape Convention¹¹ suggests that local communities can assume a key role in deciding how to enhance and manage their territory given their perceptions of the landscape, regardless of whether they are exceptional or everyday landscapes; the important thing is that they primarily meet the needs of the inhabitants, not only in terms of safety and well-being, but also in terms of perceptual and cultural stimulation. In other words, the European Landscape Convention recognizes that people's well-being is closely linked to their relationship with their surrounding environment. Local communities are therefore called upon to take an active part in the management of their land, to create landscapes that are not only beautiful to look at, but also livable and enjoyable for all.

In this sense, protected natural spaces, such as national parks and nature reserves, play a vital role in the conservation and management of heritage landscapes, preserving not only biodiversity but also the history, culture, and traditions intrinsic to a given area¹². These places serve as guardians of unique ecosystems and historic landscapes, providing a window to the past and a

⁷ Phillips 2005.

⁸ Phillips 2002; Dudley 2008 and Juffe-Bignoli, Burgess, Bingham *et al.* 2014.

⁹ Mitchell and Buggey 2000.

¹⁰ Rodotà 2012.

¹¹ Council of Europe 2000.

¹² UNEP-WCMC and IUCN 2021.

footprint for the future¹³. First, natural parks serve as reservoirs of biodiversity, protecting rare and endemic plant and animal species. They also serve as living laboratories for scientific research, enabling scholars to analyze natural evolution and climate change, thus providing crucial data for conservation on a global scale. In addition to biodiversity conservation, natural parks are guardians of the heritage landscape, preserving landscapes that have historical, cultural or aesthetic significance. Many of these areas are steeped in human history, containing archaeological sites, ancient settlements and evidence of past life. Through the protection of these areas, future generations are enabled to connect with their past and better understand their cultural and historical identity¹⁴. However, the effective management of natural parks in the context of the heritage landscape presents unique challenges. Striking a balance between conserving nature and promoting sustainable resource use is crucial. This requires collaboration between government stakeholders, local communities, nongovernmental organizations and the private sector. In addition, it is important to involve local communities in the decision-making process, ensuring that their traditional knowledge and concerns are taken into account.

2. Material and Methods

2.1. The Nebrodi Regional Natural Park

Sicily is home to a vast complex of protected areas, consisting mainly of four regional parks, 76 reserves spread across Sicily's nine former provinces, six marine reserves and several natural areas identified by regional planning. These protected areas cover about 11 percent of the regional territory, with the Nebrodi Park being the largest among them at just over 88,000 ha (Figure 1).

The Nebrodi Park covers the central and widest part of the Sicilian Apennines, connected to the east to the Peloritani, to the west to the Madonie and to the south to the volcanic mass of Etna. It is bordered by the Alcantara River, the course of the Simeto River and the modest elevations of the Erei Mountains, which mingle with the Nebrodi ends.

Established by decree of the Assessorato Regionale per il Territorio e l'Ambiente on August 4, 1993, the Nebrodi Park was born out of the need to protect a unique complex of naturalistic, historical and cultural values, forged over millennia by the civilization that has inhabited these lands. Although the will to establish the Park was already present before Regional Law No.

¹³ Frumkin, Bratman, Breslow *et al.* 2017.

¹⁴ Watson, Dudley, Segan *et al.* 2014.

98/81, which established the regulatory principles of Sicilian environmental policy, the process was long and difficult. Its institution came after that of other parks, such as Etna and Madonie, due to a slow transformation of the idea into reality in constant dialogue and sometimes conflict with local communities¹⁵. The park involves 24 municipalities, mainly in the province of Messina, with Caronia, Cesarò and Randazzo having the largest absolute values of extension. In percentage terms, the municipalities of Caronia and Floresta are among those with most of their territory included in the park, followed by Alcara Li Fusi and Longi.

Its morphology is characterized by asymmetrical slopes, variations in the profile of mountains, a wide variety of vegetation, and numerous wetland habitats. The landform, which stretches for about 70 km, is mostly gentle due to the presence of clay-arenaceous rocks, with rounded peaks and wide valleys crossed by many streams that flow into the Tyrrhenian Sea¹⁶.

The park area is crossed by numerous rivers and streams that originate from the main mountains, with the northern ones flowing into the Tyrrhenian Sea and the southern ones feeding the Simeto and Alcantara, inflowing into the Ionian Sea. Geologically, the territory is mainly composed of tertiary clay-arenaceous rocks, except in the northeastern part where Mesozoic limestone rocks predominate, as in the Rocche del Crasto. The Park's elevation varies from zero to more than 1,800 meters above sea level, with vegetation distributed in altitudinal belts determined by geomorphology, exposure, and climate.

The flora varies from typical Mediterranean scrub species in the lower areas to beech forests in the mountainous parts. Endemic and rare orchids enrich the flora, while the *Petagnea gussonei* represents an emblematic case of endangered endemism. The area is also rich in fauna, with numerous amphibians, reptiles and about 150 species of birds, including raptors such as the golden eagle that nests on the Rocche del Crasto. Mammals in Sicily include the fox, hedgehog, and wild rabbit, as well as other specimens that are characteristic of the region¹⁷.

A process called "zoning" has been applied in the Nebrodi Park, which involves a plan of different levels of protection. These levels involve prohibitions and restrictions aimed at conserving and enhancing the resources of the protected area. These resources, taken as a whole, represent the territorial capital (Figure 2).

¹⁵ Incognito and Petino 2012.

¹⁶ Regione Siciliana.

¹⁷ Ente Parco Naturale Regionale dei Nebrodi.

2.2. *The charcoal maker's trade*

Historian F. Braudel claimed that pre-1700 societies were wood and coal civilizations while 19th century societies were fossil coal civilizations¹⁸. While it is true that in the last quarter of the 19th century the irruption of the second industrial revolution marks the birth of modern industry based on scientific research for which charcoal is the main source of power¹⁹, this does not exclude the fact that the charcoal production line ceased to exist completely, not only as a source of economic subsistence for many populations. While many nations still remain far from this process of second industrialization, within the nations in which this process is initiated, vast portions of territory, especially rural and remote, remain on the margins, as in the case of Italy. In Italy, the introduction of the new energy system was slow, as was the process of industrialization, so that at the time of unification, the Italian economy almost exclusively exploited traditional sources of energy such as wood and charcoal from wood, which accounted for 50 percent of the total national energy supply; before World War I, energy consumption in Italy was low, with wood still being the main source of energy supply²⁰. Within this paradigm that considers the transition from traditional sources of energy, such as wood, to sources that represent modern growth²¹, in Italy the transition took place between the 1950s and the 1970s, and it is after 1955 that wood harvests for energy use and for industry with more than 16 million cubic meters²² began to decline to 5.5 million cubic meters in 2022 as firewood production²³. The forest, even in the Sicilian territorial context that is the subject of this paper, has always been considered an energy reserve of the populations. For example, during the Middle Ages among the civic uses was distinguished the “*ius lignandi*”, the right to supply oneself with wood for cooking and other agricultural or artisanal uses²⁴; in general, the increase in consumption and its production was linked to the increase in population and the progress of manufacturing, especially metallurgical²⁵ and chemical, therefore, the progressive cutting of forests, in the Sicilian territory where sulfur mining and chemical industry was flourishing, certainly played an environmental impact role in the reduction of the regional forest area, although this aspect should be further investigated.

This framework gives us a concise but clear view of the importance that

¹⁸ Rosati 1996.

¹⁹ Travis 2004.

²⁰ Bartoletto 2005.

²¹ Bartoletto 2005.

²² Pettenella and Andrighetto 2011.

²³ Paoletti, Anav and De Marco *et al.* 2022.

²⁴ Lombardo 2023.

²⁵ Lugli Pracchia 1995.

charcoal production continued to play even with the advent of the industrial economy, especially in Italy. In fact, there were vast areas in which charcoal production played a role of strategic importance in supporting the national and local economy where the figure of the “charcoal maker”, i.e., the production worker, played a leading role. What seems to be common to the entire spectrum of the Italian territories where charcoal was produced is, not only its economic value but, rather, the cultural value of the charcoalman’s work conferred by the freezing of his skills within a technological framework that remained almost unchanged²⁶, until the last sighs of this very ancient craft during the 20th century.

From the Alps through the Apennines and the two largest islands (Sicily and Sardinia), whatever they are called (*charbunì*, *craunari*, or *crabonaius* in the different Italian dialects) and wherever there have been and still remain forest resources, an economy based on charcoal production has developed and its origins are lost in time.

The system of charcoal production is an understudied topic, so the origins of the craft blur between myth and reality; however, it would not be wrong to try to define a temporal location on its origins since the inventions of pottery, metallurgy, and glass art between the fourth and seventh millennia before our era²⁷ presuppose a technical knowledge of fire practice, and chronological reconstructions make no mention of the production and use of charcoal until this date²⁸.

In Sicily, due to the particular orographic conformation of the island, the main charcoal processing basins were located in the hilly and mountainous hinterland territories corresponding to the Madonie and Monti Sicani ranges in the western part, the Nebrodi, Etna, the Peloritani and the Iblei in the eastern part and, finally, the Monti Erei in the central part; however, wherever there was wood in abundance even in the plains and up to the shores of the sea, small and medium-sized enterprises were established, engaged in the production of charcoal²⁹.

The large forest area of the Nebrodi has favored the development of logging for charcoal making for centuries. The charcoal maker’s trade, we believe, cannot be understood unless it is also placed in relation to the territory, intended as an area organized by man so that it better meets his needs³⁰, and to the landscape considered not as an absolute space, but according to Berque’s

²⁶ D’Onofrio 1984.

²⁷ Perlès 1979; D’Onofrio 1984.

²⁸ D’Onofrio 1984.

²⁹ Lombardo 2023.

³⁰ Ruocco 1991; Bagnoli 2022.

relational conception of landscape reality³¹ and in which for the inhabitant it is first and foremost his living environment³².

Following this perspective, the particular orography of the Nebrodi territory, which stretches over a system of fishbone valleys laid out on a mountain ridge running from east to west, facing the Tyrrhenian Sea to the north and Mount Etna to the south, while still making mobility difficult in the present day, has not prevented the charcoal industry from flourishing. The main charcoal production stations were located in the towns of Caronia, Cesarò, and San Fratello (see Figure 2) and to a lesser extent also Longi e Mistretta. The identification of these areas was carried out taking into account the state of “conservation” of the places (zones A and B of the Park) allowing us to observe the forms of government of the forest, which have remained almost “frozen”, and to read more easily the extraction activity of the charcoal burners, even though it is now lost in terms of concrete infrastructural evidence (pits, haystacks etc.). Secondly, we took into account the topography by researching and cross-referencing the toponyms that lead back to the passage of the charcoal burners, and also to logistics or to charcoal production sites through the reference sources (written, oral and artifacts) as we will see later.

From these places, the load would travel by mule to the nearby coast from which between 800 and 900 ships a year departed for other ports in the Tyrrhenian logistical basin. In this regard, in 1829 in Sant’Agata di Militello, a municipality located on the coast, about 20,000 “salme” of charcoal were sold and embarked “at one time” from the port³³, corresponding, according to the Sicilian Metric Code of 1812, to today’s approximately 5,000 tons.

Viewed from the outside, the physical landscape of the Nebrodi Mountains is designed by scaly clays alternating with flysch and appearing as a succession of rather flat humps. The macroscopic geobotanical facts of these mountains are the great spread of luxuriant turkey oak and beech forests and, the latter, cover areas for about 22,000 ha.³⁴ equal to about half of the forested extent of the park area; up to 1,000 meters altitude, crops are almost exclusive³⁵. The physical landscape, however, only partially illustrates the territory; if the dividing line between cultivation and woods appears rather clear, it is within the woods that the landscape reality that for the charcoal burner is the environment of life and relationships has materialized. These woods are mainly coppice-governed, thus making visible the action of man over the centuries and not deviating from the context of the landscapes of many Mediterranean

³¹ Dematteis 2022.

³² Berque 2022.

³³ Lo Castro 2009.

³⁴ Giardina 2016.

³⁵ Giardina 2016.

countries³⁶ (Figure 3). In fact, coppice management of forests for the production of firewood and charcoal, on the Nebrodi as in Italy, experienced the period of greatest expansion following the increase in energy demand between the 19th and 20th centuries as a consequence of the first Italian industrialization and the increase in population and the consequent growth in demand for primary uses related to heating, cooking food and manufacturing.

In the Nebrodi area, the timber that was cut to be burned corresponded to the most widespread tree species in the forested area, which were mainly: turkey oak (*Quercus cerris* L. 1753), beech (*Fagus sylvatica* L. 1753), field maple (*Acer campestre* L.) and mountain maple (*Acer pseudoplatanus* L. 1753)³⁷; other tree species were less widespread.

If our understanding of space is related to the properties of the phenomena studied³⁸, in this territory a thread is woven between natural and domesticated space³⁹. The Nebrodi woodlands significantly affect the climate of the territory, which is characterized by having, unlike the coast and the rest of Sicily, longer and harsher winters and hot though not sultry summers⁴⁰. This considerably affected the activity of the charcoal makers and shaped the charcoal production cycle. In fact, the activity of the charcoal maker is classified as a kind of sedentary-nomadism, not only because the cutting of the same forest cannot take place except every 18-20 years⁴¹, but also by virtue of the climatic weather conditions.

2.3. *The charcoal production cycle*

The charcoal production cycle went along with seasonality and was divided into “phases” that followed a preliminary phase. In the preliminary phase, the forest (*l’antu*, in Sicilian dialect) or place of work was divided into two parts corresponding to the two main seasons of work, one for winter, the other for summer; all this affected the type of product that was then sold by distributors in the markets: the work of the charcoalmen at different altitudes, according to seasonality, meant that the production of charcoal from turkey oak was much more frequent in winter, while that of beech in summer (Figure 4).

At this stage, the domestication of the space by the charcoal makers began, identifying a glade or “*chianu*” in the center of the “*antu*” that was leveled with simple tools that remained unchanged until the 1950s, including

³⁶ Morandini 1994; Quatrini, Mattioli *et al.* 2017.

³⁷ The International Plant Names Index Collaborators 2019.

³⁸ Dematteis 1985.

³⁹ D’Onofrio 1984.

⁴⁰ Ente Parco Naturale Regionale dei Nebrodi.

⁴¹ D’Onofrio 1984.

the “billhook” for the construction of the haystack (*pegghiaru*), that is, a rudimentary structure built of wood and insulated with foliage, herbaceous clumps and other natural elements taken from the forest, in which the charcoal makers would dwell throughout the production campaign; its size was proportionate to the number of working units and sometimes their families. The necessity of building a residence in the workplace is a demonstration of how rather complex and tiring the process of charcoal production was, which did not know or admit of pauses. Having completed the preliminaries, they immediately moved on to the operational and productive phase of charcoal production, which was divided into four stages. The first stage involved cutting the forest, sorting and preparing the wood according to size. The tools used were the axe (*ccetta*), the square saw (*sirruni*), and, in order to reduce the larger pieces into smaller cuts, they used to detonate them with gunpowder⁴² using a wooden awl (*fuddaturi*) to make a hole in which to insert powder and fuse into the stump to be detonated; wedges (*cugnira*) served the same function. The wood was stacked according to size and the next steps followed. The second stage, along with the next, was among the most delicate in the process of turning wood into charcoal, and consisted of the preparation of the charcoal production pit, the floor, and the *fussuni*, i.e., the charcoal pile in which the charcoal was cooked. The process of building the charcoal production pit took between one and two days, depending on the amount of wood and the size of the charcoal pile. The construction of the charcoal kiln took place in the center of the threshing floor and was a work of meticulous craftsmanship, otherwise the product would be lost due to poor cooking or the collapse of the charcoal kiln would jeopardize the very safety of the charcoal makers. At the end of the process, the charcoal pile took the form of a hemispherical dome: they began to build it by placing at its center a pile of wood with the coarsest pieces, usually in the shape of a parallelepiped that served as a chimney and at the center of which was placed the ignition bait and closed at the top by a large stone. The charcoal kiln was then closed by placing the wood in a slightly inclined position until a dome was created. In order with this operation to be carried out in the best possible way, it was necessary that the cutting of the wood, by the *serrista* (the woodcutter), be done in a skilled manner. The final procedures to finish the charcoal pile were determined by *infrascatura*, a natural insulation made of leaves, ferns and other organic material readily available in the forest, and finally it was covered with soil. This operation was necessary in order to create an elastic cover that followed the movement of the charcoal pile during the phase of cooking the wood, since it lost about 40 percent of its initial volume. The third phase involved the cooking of the charcoal, an operation that took about seven to eight days, and was lit through

⁴² D’Onofrio 1984.

a small door, positioned at its base, through a deck that lit the bait placed in the center of the kiln. This operation generally took place in the morning in order to take advantage of the breezes that fueled the firing and to be able to control the start of combustion during the first day. Toward the last light of day, the top of the charcoal kiln was opened in order to fuel combustion and control the drying process, that is, the loss of the wet fraction of wood. To climb the charcoal kiln, the tool used was a common ladder. This phase was characterized by that process of care and government of the fire in which the charcoal maker could tell from the colors of the smoke whether the firing process was proceeding well or whether corrections were needed; moreover, progressively to its loss of volume, the charcoal makers carried out frequent operations of beating the insulation of the structure in order to make it adhere perfectly to the internal wood being charred. The operation was completed as soon as the charcoalmen noticed bluish veins in the outgoing smoke and that the charcoal kiln had lost its initial volume and subsided. The fourth and final stage was the extraction of the now cooked charcoal, in charcoalmen's slang it was called *sfussari*. Water was thrown in to dampen the fire and finally the product was allowed to cool and the entire structure of the charcoal kiln was begun to be demolished with tools such as the rake (*rastriedru*), the pitchfork (*furcali*), and the shovel (*pala*) in order to separate the finished product from the insulating soil (Figure 5). At this point, the product was ready and loading operations could be carried out on mules and other means of transport to reach places of logistical distribution or sale.

2.4. *Methodological approach*

In this research, we applied a qualitative approach, following the interpretative paradigm through a method based on the selection and reworking of existing information. We collected data through a document analysis, using existing literature, normative documents, research reports, websites, and oral sources. To conduct our observation, we first reconstructed the shared narrative of charcoal production activity in the chosen area. Next, we explored the main web pages and their subpages on Google Scholar using the keywords “charcoal producers, charcoal, Nebrodi Mountains, forest management”, preferring the geo-historical approach. To study the visual component, we collected historical and other relatively recent photos, both through popular search engines and social networks but also through contacts with the local community in the municipalities of Cesarò, Caronia and San Fratello.

We then proceeded with direct field investigations in order to meet local historians, nature guides, tour operators and, whenever possible, even the last charcoal burners; then we went inside the wooded areas of the selected study area with the aim to directly verify the information received and found, but

also to better interpret the signs of what is still tangible and to realize how much remains only in the imagination and memory of the local community.

Finally, we used GIS (Geographic Information System) methodology to initially reconstruct the most representative area of the Nebrodi Mountains territory. Next, we identified the different elevations and slopes of the mountainous area where charcoal making activities were carried out, according to the most suitable plant species for charcoal production, seasonality and relative weather-climate incidence. It is well established that GIS is a robust and flexible technology that integrates geographic data with analytical tools to visually represent, analyze and understand spatial patterns and connections within the natural environment. With this in mind, a collection of visual and numerical information began with the goal of building a geo-database to be shared with other research partners. For this, we have begun to map out routes that, to a first approximation, should represent the main routes of charcoal production and movement.

3. *Proposed Framework for a Charcoal Heritage Trail*

3.1. *The “Charcoal Thematic Trail” that isn’t or wasn’t there*

The physical landscape of the Nebrodi Mountains, whose obvious endogenous signs of charcoal production contributed to shape it, reveals itself as a product of the passing of time to which exogenous elements from the outside, with which this territory has exchanged more or less established patterns and phenomena, are integrated⁴³. From the perspective of the research, one has to ask whether “the charcoalmen’s landscape” can be considered an example of “landscape heritage”. Therefore, underlying issues related to such a definition emerge: capital, heritage and local community as inseparably linked elements in their roles as producers and defenders of heritage. If this were true, we would have, in clear form, a cultural and physical landscape distinctly shaped by the activity of charcoal producers.

Despite the importance that this economic activity had in the past and the role it played in forest governance, to date, however, there does not seem to exist a clearly delineated charcoalmen’s landscape that can be perceived as such by an outsider, reflecting a “legacy” recognized by the local community, except through mediating figures such as nature guides.

Even in places clearly defined by some toponyms related to this activity, such as “Portella calacudera” (from *cala la cudera* i.e., a piece of the mule’s

⁴³ Croce and Perri 2009.

harness that, as soon as the descent began, was positioned so that the weight of the load would not shift forward and hurt the mule) (Figure 6), or in the ancient paths used for moving charcoal to commercial destinations, such as “Scarilluso” (from *scauru* or stopover for goods), or even in some rare demonstration of the production process by some still-living workers, from direct on-field observations, an endogenous process of landscape patrimonialization by the local community does not appear evident. The process of patrimonialization of a site, it should be recalled, is not limited to preserving it as a place of memory to avoid oblivion, but also involves its recognition as a collective legacy, becoming necessary the active participation of the communities involved, both public and private⁴⁴.

On the other hand, the establishment of the Nebrodi Regional Natural Park, despite having made a substantial contribution to the protection, conservation and defense of the landscape⁴⁵, does not seem to have played the role of institutional medium between territory and community capable of activating processes in which the preserved, defended and protected landscape, including its cultural components, is also perceived as heritage. Nor have municipal institutions and local stakeholders contributed to this process.

In this context, the numerous trails or charcoal routes, as an element of a landscape that embraces a diversity of manifestations of the interaction between humans and the natural environment defined as cultural landscapes⁴⁶, acquire an anonymous connotation for both the local community and the unaware hiking users. For example, as can be seen from the Nebrodi Natural Park’s information channels (website, maps, information brochures, etc.), there is a very short “Charcoal Thematic Trail” at Portella dell’Obolo, in the municipal territory of Caronia, which appears more like a musealization of the charcoal production process rather than a representation of the Nebrodi cultural landscape as a result of the interaction between man and the natural environment.

Of course, it is possible to say that the cultural landscape of the charcoal burners coincides with a large part of the geographical space of the Nebrodi, and consequently the identification, enhancement and promotion are the responsibility of the Nebrodi Park, as an agent of mediation towards the many communities residing there. Despite the importance that this economic activity had in the past and the role it played in forest governance, to date, however, there does not seem to be a clearly delineated charcoal burner landscape that can be clearly distinguished and perceived by an outsider, reflecting a “legacy” recognized by the local community, except through mediating figures such as nature guides.

⁴⁴ Petino 2023.

⁴⁵ Ente Parco Naturale Regionale dei Nebrodi.

⁴⁶ Lukoseviciute, Nunes Henriques, Nobre Pereira *et al.* 2024; UNESCO – World Heritage Centre 2008.

3.2. *Hypothesis of tracking thematic pathways on charcoal production.*

Cultural tourism itineraries are not a recent invention, from the oldest cultural itineraries of religious culture to journeys of education and discovery, and to the most modern methods of promoting local identity. Examples are the Via Francigena/Romea (Camino to Rome) or the St. James Way, for the religious aspect, or the grand tours that, since the late 1600s, took the educated elites of northern Europe to discover the places and cities of art, in France and Italy, for the aspect related to personal experiential growth⁴⁷. From the 1800s, in the period of Romanticism and the “triumph of the bourgeoisie,” educational travel was further enriched by the search for “landscapes” and natural beauty⁴⁸, while later, in the second half of the twentieth century, two fundamental paradigms made their appearance: the free enjoyment of leisure and the concept of mass tourism⁴⁹.

Cultural itineraries represent a new form of offer, which has, among others, the intention of distributing an increasingly pressing and rich tourist demand over the territory. To understand how an itinerary works and how it responds to the needs of local areas and communities, it is necessary to observe its structure. It generally features routes in stages; each stop can be defined as a node, and the nodes are connected by segments, characterized by one or more unifying cultural themes that, as a whole, give meaning to the entire itinerary. The method of execution can be variable: linear, circular, radiocentric, reticular, or spiral⁵⁰. The various functions involved in itineraries, the economic, the social, and the environmental, involve care and capacity on the part of the promoters to cope with the problem of regulation, planning, control, and promotion of the itinerary, including in relation to the territories in which it is nested and the communities involved⁵¹.

With these premises in mind, the hypothesis of tracing one or more routes included an initial phase of surveying the already existing cartography related to the paths in the target area. In dialogue with local institutions and communities, it was possible for us to locate more precisely the areas of interest and to succeed in making a synthesis since the area of the charcoal production activity was very wide. Within this somewhat problematic framework, collaborations and discussions with the Italian Association of Environmental and Hiking Guides (AIGAE) and, above all, with local people who, through word of mouth, allowed us to get in touch with the now scanty local workers in the charcoal production chain turned out to be strategic (Figure 7).

⁴⁷ Trippa 2015.

⁴⁸ Cambi 2011.

⁴⁹ Poon 1993; Lozato-Giotart 1999; Bramwell 2004; Naumov and Green 2015.

⁵⁰ Battistini 2015.

⁵¹ Lemmi 2015.

The result of these surveys and exchanges, supported by direct on-site visits, allowed us to summarize the structure of the Charcoal Thematic Trail as a polycentric, networked system. There are four trails identified and they were traced entirely by the authors. To trace them, the topography of the area was considered, looking for traces of logistics and production sites. Given the peculiar characteristics of charcoal production, such as seasonal displacement and the establishment of temporary production infrastructure (Figures 8 and 9), the field survey was particularly difficult. As can be seen through Figure 10, the trails develop in relation to the Nebrodi Mountains ridge and enter into relationship with the Italy Trail, which tends to overlap with the former. From a purely technical point of view, the NAVSTAR GPS system was used for route tracking while post-production was developed in the QGIS environment.

In the next stages, we will proceed with the verification of the correspondence of what has been traced with historical sources and oral information collected through the stay in the municipalities of Cesarò, San Fratello, Caronia and Longi. Specifically, all visual material produced will be verified before being entered into a database shared with research partners.

4. *Discussion*

According to what has been observed and eventually proposed, in addition to what emerges from the characteristics of the physical space of the area of interest, it is important for the design of thematic itineraries to take into account the socio-cultural aspects on which the very representation of the area depends⁵². It is also evident that if the end point of the planning of a thematic itinerary is also the touristic fruition⁵³, in advance it is necessary to encourage the re-appropriation of what is offered by the local communities themselves, empowering them to territorial sustainability⁵⁴; in addition, it is necessary to shift their focus to territorial capital and local needs so that they can be recognized as an actual or potential tool for their own development goals⁵⁵.

An itinerary or network of itineraries, consequently, can only be Community Based and Community Involved, in the sense that territorial capital can only become heritage if the community, or affected communities, exercise the function of cultural medium between themselves and outsiders⁵⁶.

These preliminary considerations are particularly apt when communities

⁵² De Rubertis, Mastromarco and Labianca 2019.

⁵³ Lemmi 2015.

⁵⁴ Merino Del Rio 2020.

⁵⁵ De Rubertis, Mastromarco and Labianca 2019; Dematteis and Governa 2005; Camagni 2009.

⁵⁶ Pollice and Spagnuolo 2015.

suffer from a certain territorial isolation. In fact, if we refer to the classification on tourism spaces by⁵⁷, it is possible to place the Nebrodi Mountains area in the “deep interior in the mountain environment” type spaces. These areas are sparsely populated, difficult to access and where parks and nature reserves are often present as a result of less anthropogenic pressure on resources, with a slowing or relict economy. Such dynamics, in this specific case, are still active today with trends that have never stopped, affecting all 24 municipalities of the Nebrodi Natural Park (Table 2).

<i>Municipalities</i>	<i>Pop. 1991 (before the Nebrodi Natural Park)</i>	<i>Pop. 2001</i>	<i>Pop. 2011</i>	<i>Pop. 2021</i>
Acquedolci (ME)	5122	5373	5744	5494
Alcara Li Fusi (ME)	3079	2473	2072	1742
Capizzi (ME)	3797	3564	3347	2888
Caronia (ME)	4116	3589	3463	3093
Cesarò (ME)	3280	2815	2572	2204
Floresta (ME)	923	637	516	470
Galati Mamertino (ME)	3419	3127	2794	2328
Longi (ME)	1784	1653	1562	1350
Militello Rosmarino (ME)	1552	1445	1334	1174
Mistretta (ME)	6195	5541	5014	4338
Raccuia (ME)	1692	1389	1139	889
Sant'Agata di Militello (ME)	12796	12876	12803	11950
Santa Domenica Vittoria (ME)	1246	1173	1067	873
San Fratello (ME)	5055	4561	3942	3323
San Marco D'Alunzio (ME)	2396	2202	2083	1812
Santo Stefano di Camastra (ME)	5194	4653	4674	4415
San Teodoro (ME)	1689	1578	1421	1244
Tortorici (ME)	8484	7535	6732	5792
Ucria (ME)	1646	1370	1105	924
Bronte (CT)	18689	18512	19234	18307
Maniace (CT)	3101	3543	3671	3768
Randazzo (CT)	11550	11223	11108	10313
Cerami (EN)	3100	2462	2150	1867
Troina (EN)	10406	10061	9628	8642

Tab. 2. Demographic dynamics in the municipalities of the Nebrodi Park (Source: our elaboration based on ISTAT data).

⁵⁷ Lozato-Giotart 2018.

In a scenario where in the last decade the park area has lost about 10,000 inhabitants, almost always young people of working age, it is as difficult as ever to succeed in maintaining adequate levels of protection of the landscape heritage because, while natural components are preserved by intermediate bodies such as the nature park, from the cultural point of view the claims for memory and local identity to find adequate preservation are lacking. While their combination can produce phenomena that are clearly located somewhere and can be considered repositories of shared values and memory for future generations, in the case where they are separated this may not happen. The goal of identifying the “Charcoal Thematic Trail,” a historical, cultural and nature trail within the Nebrodi Regional Nature Park in Sicily, based on the tradition of the charcoalman’s craft and the charcoal production cycle, was driven by the desire that a cultural component of this identity would not be lost. By involving both local institutions and other components of civil society, with the aim of supporting cooperation and interaction for the creation of endogenous cultural routes and expanding a potential sustainable tourism offer, it was possible to observe how it is possible to develop a conception of the landscape and its enjoyment based on inherited traditional agro-pastoral practices, the value of cultural heritage and territorial identity.

To carry out this practical exercise, we assumed that a historical legacy was properly preserved and equally “communicated” through old and new media, but this is not the case. From our preliminary documentary observations, the charcoal trade is virtually headed for oblivion having disappeared both in economic practice as well as in its historical preservation. The only trace can be found on the Nebrodi Park website (Figure 11), which, in one of its subsections, reports generic and incomplete information about the existence of a hypothetical charcoal theme trail but without any practical information or map. Hence the idea of creating a partnership between Nebrodi Park, Destination Management Organization, Italian Association of Environmental Hiking Guides and the GeoLab Sicilia of the Italian Geography Teachers Association, functional to fill the lack of information and make it accessible.

5. Conclusions

Cultural tourism is a segment that attracts the attention not only of tourists, on the demand side with a significant increase in spending, but also of researchers, because they perceive it as being strategic; fact, while it also provides an important source of income for local communities, it is also a good

way of preserving cultural heritage⁵⁸. Not to mention that territories that focus on cultural tourism generally also achieve an improvement in destination image with a positive impact on the consumer's choices⁵⁹.

Along with these considerations, the environmental impact of tourism⁶⁰ has emerged as a major concern in an era struggling with climate change and ecological fragility. Problems of tourist overcrowding, habitat degradation, and carbon footprint call for a reassessment of travel practices and a commitment to sustainable tourism efforts⁶¹. Integrating responsible environmental practices into the tourism industry is crucial to the preservation of the landscapes and ecosystems that make destinations unique.

Tourism is an engine of economic welfare, and the crisis has reminded us of the vital role it plays in global, national and local economies, even in problematic terms. Climate is one of the main resources for tourism, especially as it helps determine the suitability of each place to host tourism activities. In the event that climate change is not halted, its effects will result in a series of negative impacts that will also fall on tourism activity, to the extent that its vitality will be compromised.

It is under this scenario that our research finds its basis: on the one hand, the importance of the protection and enhancement of the heritage landscape, and on the other, the expansion of tourism offerings, allowing territories in socio-economic decline to accommodate the ecological instances of a booming market segment such as ecotourism.

This has found symbolic value in the cooperation between public and private entities, a first step from which to start the necessary research developments that would include the formalization of the proposal and the subsequent operational steps.

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⁵⁸ Ferrari, Bocci and De Santis *et al.* 2022.

⁵⁹ Barroso, Armario and Ruiz 2007; Pérez-Calderón, Prieto-Ballester and Miguel-Barrado *et al.* 2020.

⁶⁰ Donato 2007.

⁶¹ O'Reilly 1986; Bertocchi and Visentin 2019.

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Appendix

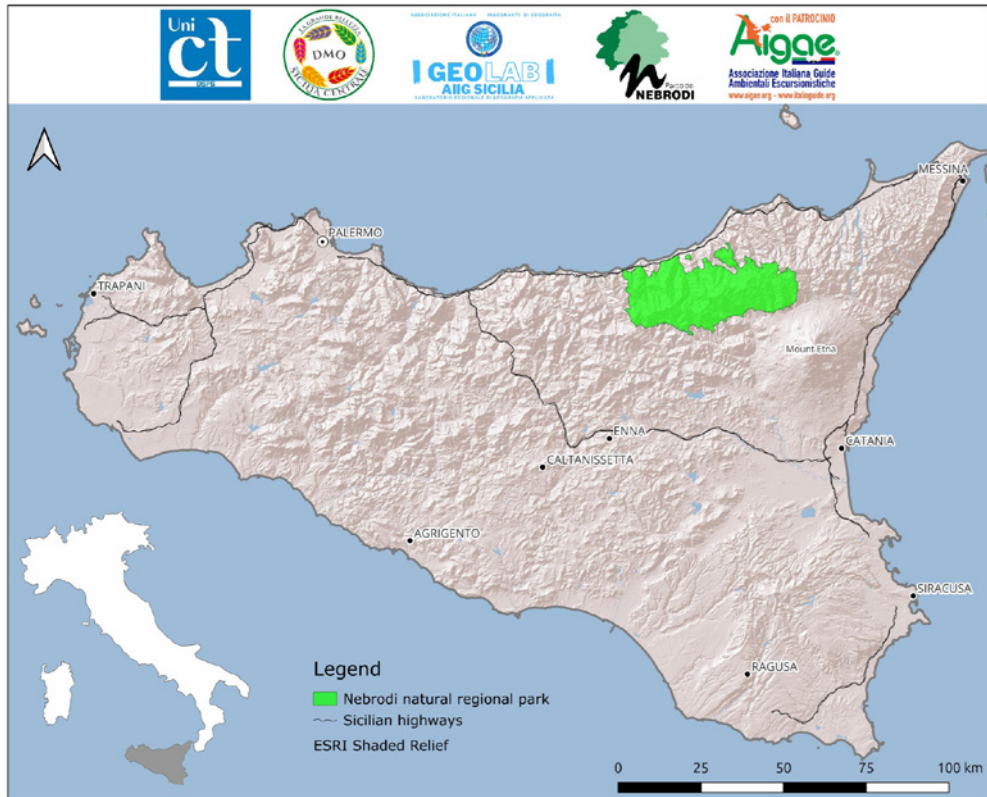


Fig. 1. Territorial localization of the Nebrodi Natural Regional Park

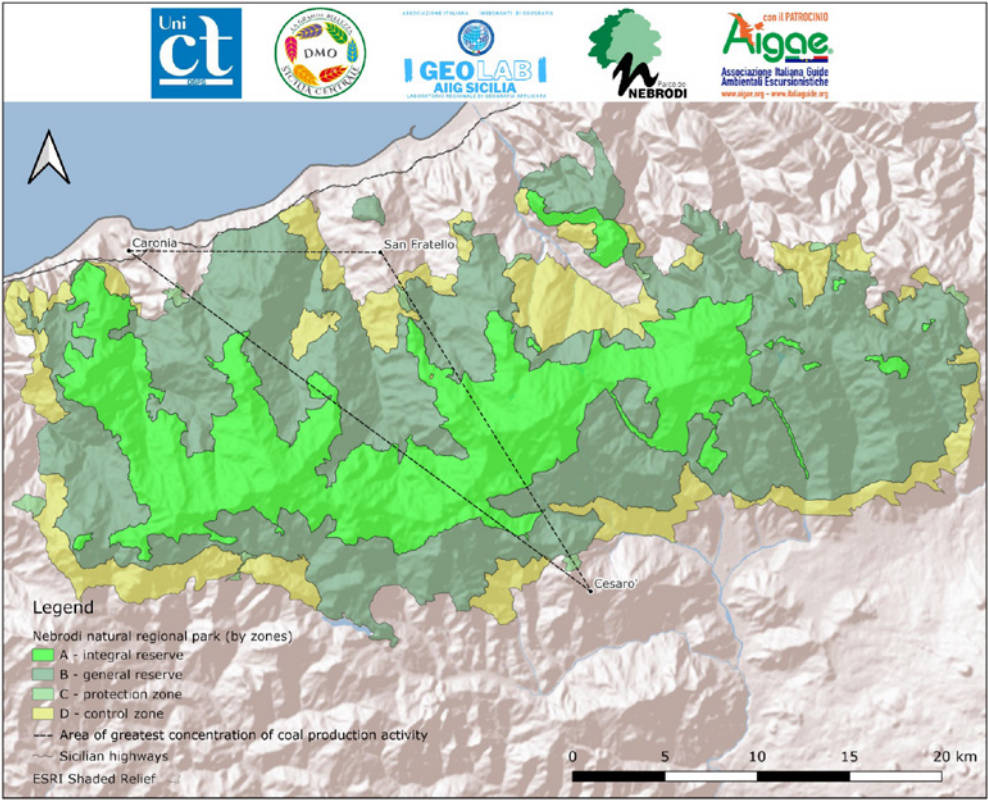


Fig. 2. Nebrodi Natural Regional Park by zones and charcoal production area hypothesis



Fig. 3. Examples of forest landscape not used (high forest, above) and used (coppice, below) for charcoal production (credits: ©Autori, 2024)

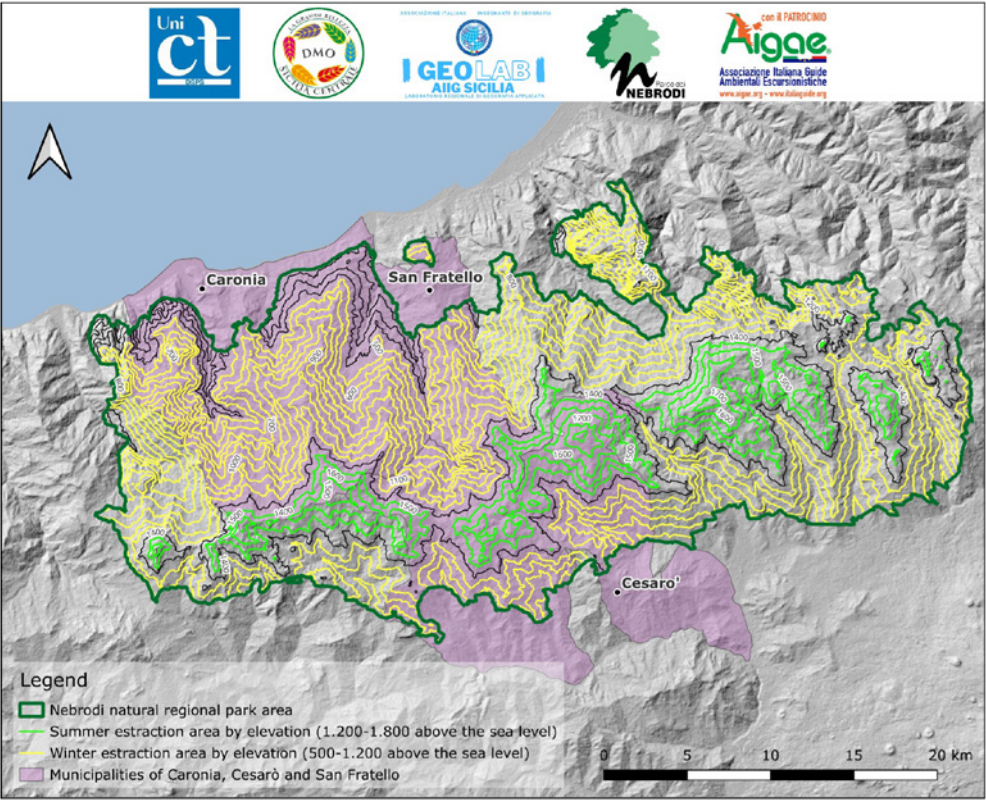


Fig. 4. Different areas of timber extraction according to seasonality



Fig. 5. Separation of finished product from insulating soil (credits: ©Gino Fabio, 2001)



Fig. 6. Toponyms related to charcoal processing along the “Sentiero Italia – Italy Trail” (credits: ©Autori, 2024)



Fig. 7. Interview with Mr. Pappalardo, one of the last charcoal producers in the area (credits: ©Autori, 2024)

Fig. 8. The process of building the charcoal production pit (credits: ©Gino Fabio, 2001)

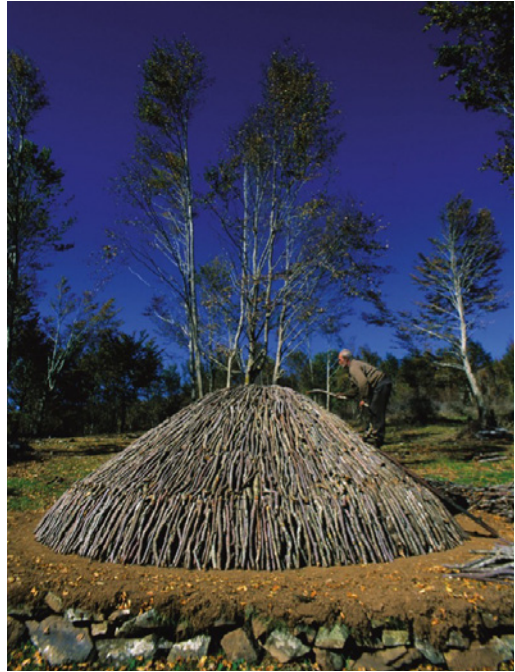


Fig. 9. The charcoal production pit after charcoal production and the glade cleared of the temporary structure (credits: above, ©Gino Fabio, 2001; below, ©Autori, 2024)

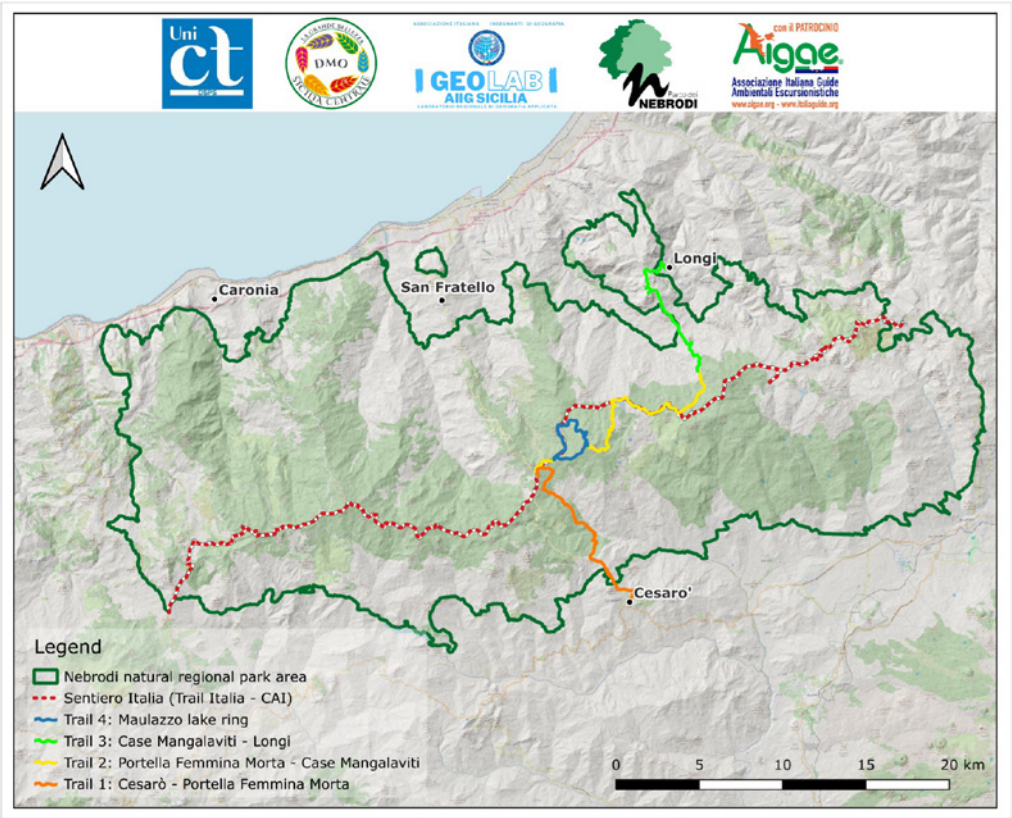


Fig. 10. Hypothesis of tracking thematic pathways on charcoal production

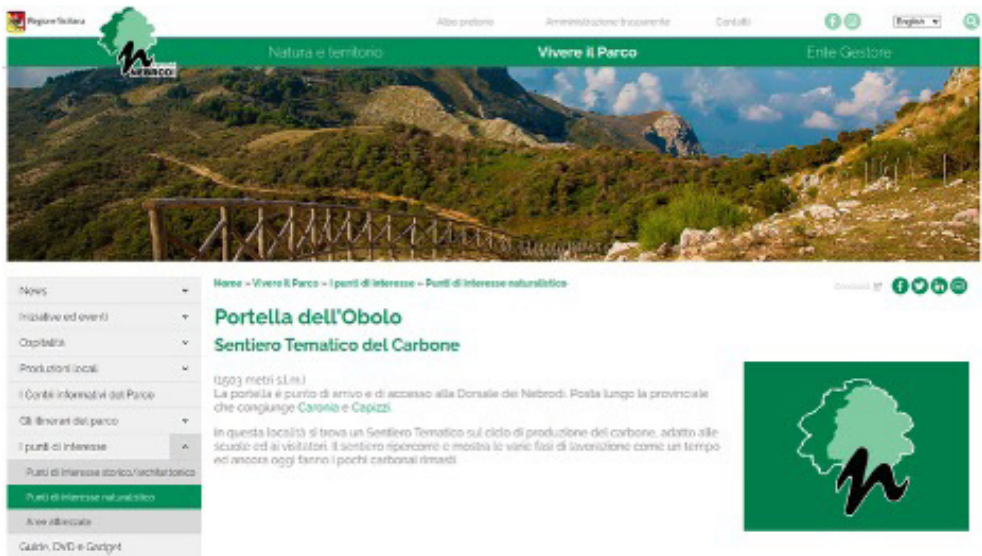


Fig. 11. Screenshot from the Nebrodi Park website

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