Chapter 9
Lombardy

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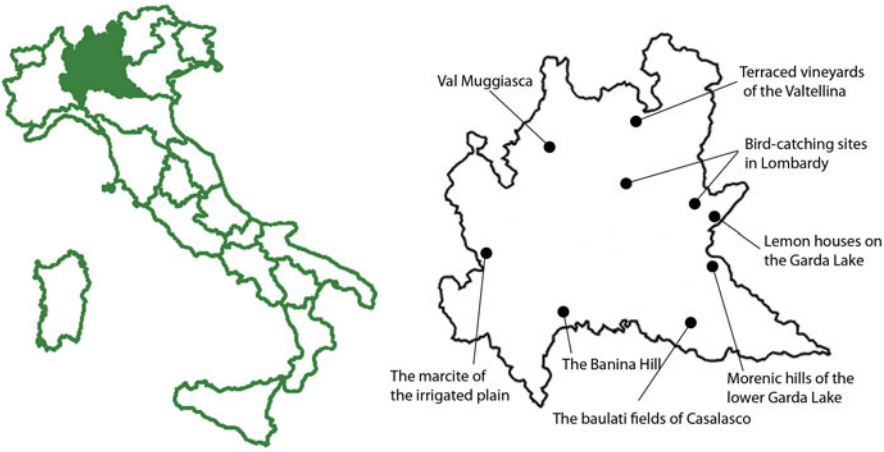

9.1 Introduction

Lombardy's rural landscape is highly diversified, including mountain areas with peaks of over 2,500 m high, hills and plains. The area is crossed by an extensive network of river waterways and it has great lakes as well as Alpine and pre-Alpine small and medium lakes. The forest surface covers 28 % of the region, while the agriculture surface covers 46.85 % and grazing lands 11.5 %. The rest of it hosts one of Italy's most industrialized territory with both urban and rural areas; it also includes a large surface referred to as the "urban pole" in the national strategic plan for rural development (2007–2013), which is characterized by a diffused urbanization made of small and medium settlements within the rural area. Lombardy presents different climatic and geomorphologic conditions as well as different types of vegetation. Since

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Ancient Times and over the centuries, human productive interventions have been carried out everywhere in the region—except in some of the highest mountainous areas—and indeed deep changes have been acted by socioeconomic and productive associations and/or by administrative and political bodies that local population had set up. Inventorying and cataloguing as they have been carried out in this research actually provide a cognitive background to any initiative for the protection of areas of outstanding interest, and allow guiding changes in order to keep a link with the historic traces of the past that are left on the whole territory. This should help reach a diffused quality of places in line with the most recent orientations of such concept and with the European policies on landscape (European Landscape Convention 2000).

In Lombardy, the development of agricultural industrialization and urban enlargement have partially reduced the extension of rural landscape that hosted complex historical traces of the past. Sites—some of which are rather small—were chosen in this research with the intent to show the richness and complexity (*integrity*) of the traces of the past that are left on them, to offer an overview of different categories of agrarian landscapes, to underline their relevance as testimonies of characters that have disappeared (*rarity*) and their function of collective memory as acknowledged by the local population.

We used a two-level but integrated method for cataloguing that allowed addressing various disciplines and intervening at different scales on the territory; we actually introduced the concept of "*landscape systems*" where systems are made of *elements* (or *components*) interconnected by *historic links*.

By *landscape system*, we mean the physical expression—visible and tangible—of productive, social, economic and cultural entities within the community who has been acting over time (ex. communities living in the mountain areas, or monks living in the plains) or of an outstanding project conceived and carried out by a single person (ex. the Sforza family's works of irrigation in the Padan Plain) that are still readable today. Such concept refers to the cultural line expressed in the studies of regional history and human geography, carried out especially during the twentieth century and referred to the works of March Bloch and Fernand Braudel in France and of Emilio Sereni and Lucio Gambi in Italy. It is also linked to the definition of "evolving" cultural landscape used by Unesco and to scientific theories. It is based on historic and functional links that existed in the past and came to us and where ecological links are only one element of today's methods to interpret places. This reading process, which uses *historic systems*, focuses on the *links* between the elements and the context and among elements themselves: this approach was strongly missing in traditional census of historical heritage and landscape that preferred to identify large homogeneous territorial areas, formal patterns, use of soil, cultivation regulations. *Links* are physical, visual, functional, economical, productive, social, cultural and symbolic. The *elements* that make up the system and that interact reciprocally may be different according to the places. Among the items that we consider as *elements* there are: the network of fields, the constructive structures of agricultural areas (manufacts like terracings, embankments, *baulature* or hill-shaped fields, *marcite* or water meadows, channels, etc.), the buildings with their own architecture and function,

cultivation regulations, cultivation and breeding techniques, manufacts' building and maintenance techniques, land regulation, ways of life, etc.

The research in the Lombardy region has identified some specific *agrarian landscape systems* and some *constitutive elements* still visible today which belonged to other systems. Lombardy's *systems* that were pointed out are: the "mountain transhumance", including the special case of the Muggiasca area; the "hill settlements" of the Banina Hill and of the Moreniche Hills of the Garda Lake. All the essential elements that originated them are still visible and readable as well as the links that connected them into a socio-economic and cultural unity (*landscape system*). They also still contain many other kinds and levels of historic traces of the past, although we cannot deny that agrarian landscapes have undergone inevitable changes due to the action of man and nature over time.

Constitutive *elements* that were pointed out have various significant features: the *rarity* of unchanged historical treatment techniques of soils still used in contemporary agriculture (*baulati fields* in the Casalasco area that are still used; and *marcite,* which were vanguard techniques dating back to the Middle Ages that have characterized the irrigated plains until the nineteenth century, are still visible in some rare sites thanks to public financing, to specific cultural willingness and to the technical know-how that few farmers still preserve); the state of the *remains* (*uccellande* or bird traps, which are vegetal structures to catch birds, are very common in the forests of northern Italy but are now legally prohibited for hunting goals; the *limonaie* or lemon-houses, structures which are still visible today in a large part of the Garda Lake landscape, are unique in Italy and abroad, and if they were conceived for the production and exportation of citrus fruits in Europe, most of them are no longer used now); the role of *characterizing* places in the collective perception of landscape (*terracings* are diffused in the mountain and hill areas and most of them are still used as productive vineyards, like for example those in Valtellina).

The research was based on some cognitive sources. Actually it strongly referred to global regional data that were taken from the studies for the Regional Landscape Plan. In addition to them, more detailed information and assessments were considered, like those taken from bibliographic sources and from specific data directly given by the staff working in regional, local and protected areas bodies, as well as by operators and researchers with a specific local knowledge. Sites were chosen through a close collaboration with the offices for landscape of the Lombardy Region and after consultations with local bodies.

9.2 The *baulati* Fields of Casalasco (45° 06′ 50″ N; 10° 25′ 40″ E)

This rural landscape is characterized by the presence of the traditional *campi baulati* system. It extends for about 2,500 ha at an altitude of 25 m a.s.l. It occupies most of Casalasco, the south-eastern sector of the province of Cremona, located at the border with the province of Mantua and delimited by the Po river and the final stretch of the Oglio river. The more representative sections are located between the

municipalities of Piadena, Calvatone and Tornata, in the province of Cremona, and Rivarolo Mantovano in the province of Mantua, and can be accessed through state road SS 10 which connects Cremona and Mantua. The area is included in the SIC Le Bine and in the Regional Park Oglio Sud. The area extends over the alluvial terrace of the fundamental level of the plain. It is mainly gravel and sand, covered in many places by a superficial layer of mud and the terrain is flat. The soil is deep, with average density and good fertility, often mixed at low depths with calcareous outcrops know as "bambole" or "castracan."

The significance of the area is due to the historical persistence of the field management and irrigation system typical of the Casalasco area known as *baulatura.* The *balauti* fields are not continuous, but occupy small portions of the above area specifically tied to the use of this agricultural technique. Described in Virgil's *Eclogues*, the lands of Cremona were characterized already in the Roman period by a hierarchical irrigation system, associated with the centuriation, which guaranteed a widespread distribution of water to the fields. The cultivation of the fields according to the system of the *campi baulati* and ditches came after the reclaiming of the marshy land in the lower part of the area, although the origin of this irrigation system remains unclear. A sharecropping system was certainly in place already in the fifteenth century, as stated by abbot Giovanni Romani in the first volume of his *History of Casalmaggiore*, published in 1828. The *balautura* system has the purpose of rapidly draining rainwater from mostly argillaceous fields. Fields are shaped with a central hump and kept in this condition through a special plowing system. The draining of excess water is guaranteed by ditches that are still in good repair. Fields are traditionally quite large, mostly rectangular with an average size of 100–150 by 40–70 m. A thick network of parallel ditches, hierarchically organized in a very precise fashion according to size, ensures the draining of excess water, which would otherwise remain trapped in an area that is located lower than the maximum level of the two rivers. Only an expert system of embankments prevents it from being flooded. In this way, instead, water stagnates only in particularly rainy years. The scenery is distinctively marked by draining ditches, rows of trees or hedges, and was also characterized, up to the second half of the twentieth century, by the intense cultivation of vines, alternating with fields of cereals and other plants. Vine was cultivated according to the traditional system of the *piantata* of the Padania valley, i.e. in combination with trees used as living props, and was for a long time the most important source of revenue in the area.

Concerning integrity, few holdings, in which a few rows of trees or small family vineyards are all that is left to separate the areas now dedicated to the cultivation of cereals, tomatoes, or melons. In the second half of the twentieth century, the system based on the combination of vine and other crops progressively disappeared, and in recent years there have been yet more changes due to the expansion, still under way, of vegetable gardens and nurseries of ornamental plants.

The vulnerability of the *baulati* field landscape and of the traditional cultivation systems is due to their being progressively abandoned: The *balautura* required major and constant maintenance work, and with the spread of mechanization, the use of traditional farming systems and maintenance of water works have declined, though

Fig. 9.1 The *baulatura* system is one of the historical land management techniques of the Po River valley, developed to drain water away to reduce soil humidity

one must acknowledge that working and living conditions for farmers have improved. The transformation of the agricultural landscape following mechanization, and the progressive disappearance of these traditional systems from even the memory of the people, suggests the importance of making the history of the territory known as well as the reasons that motivated the adoption of these traditional systems, whose layout can, with difficulty, still be discerned in the gently curving shapes of the fields. The Province of Cremona, as part of the Agenda 21 program, has approved a specific project, aiming to attract the attention of the local population on these traditions which, while part of the everyday life of each inhabitant, are no longer attributed their deserved cultural and environmental value, and risk being no longer perceived in the layout of the land or worse completely forgotten. The Province is therefore seeking to interest tourists in the rediscovery of the local landscape as an expression of the shaping of the land by the inhabitants (Fig. 9.1).

9.3 The Banina Hill (45° 10′ 23″ N; 09° 29′ 15″ E)

The area corresponds to the agricultural system of the Banina hill and extends for about 1,450 ha in the municipalities of San Colombano al Lambro (MI), Graffignana (LO), Inverno, Monteleone and Miradolo Terme (PV). Most of it is public land. It occupies the upper part of the hill, at altitudes varying between 70 and 145 m

a.s.l. and is served by an efficient system of roads. It is included in the Parco della Collina of San Colombano PLIS (Local Park of Super Communal Interest). The hill extends lengthwise for about 8 km, from north-west to south-east, and has a maximum width of 2 km, on the north-east/ south-west axis. It is located between the Lambro River, which borders its north-eastern slopes and the River Po to the south. The area can be reached from Lodi going south on SS 235 state road, or from Pavia, going east on SS 234 state road. The area is protected according to the landscape law n. 1497/39.

The geographic and geologic uniqueness of the Colle di San Colombano area has always attracted the interest of both scientists and amateurs interested in geology, paleontology and archeology. The ancient Pliocene seabed continues to offer testimonies of its existence. In some parts of the hill it is sufficient to dig a little to plant vine to unearth beautiful specimens of excellently preserved fossil shells. The hill is made of Pliocene clays and limestones covered by alluvial material of the Quaternary period. The south/south-west contour shows an indentation that seems to correspond to an ancient bend of the river Po. The hill seems the remain of a once much more extensive plateau, eroded on two sides by the increased development of the two rivers that border it.

The significance of the area lies especially in the persistence of the original agricultural landscape characterized by a highly subdivided network of holdings, in which vineyards, meadows, and fruit orchards alternate. The area is already mentioned in Middle-Age sources. The importance of the area of San Colombano is attested by a series of privileges that the Visconti family gave the area at the end of the fourteenth century to help its development, cultivation and population. The land was subdivided among small and medium-sized owners of pieces of land spread out over the hill rather than concentrated in single properties. The fragmentation of the holdings is also a consequence of the habit of the monks of the Carthusian monastery of Pavia to grant the temporary or indefinite use of their territory of 1,300 ha, since the fifteenth century. The land of San Colombano was described by Francesco Petrarca who, after having been for a long time a guest of the Visconti family, at the Castle of San Colombano, wrote in 1353 in a letter to the Archbishop of Genoa: *"This a lovely and extremely fertile hill, positioned almost in the midst of Cisalpine Gaul, which in the part from which the wind Borea and Euro blow is close to St. Colombano, a very well-known castle surrounded by strong walls. At the foot of the hill flows the Lambro, a river with very clear waters which, although small, can be navigated by ordinary boats, which flowing from Monza not far away from here, goes into the Po: to the west the view is ample and spacious, a pleasant solitude and a friendly silence reign. I know of no other place that from such a low height can offer such a vast view of noble lands; it suffices to cast your gaze round to see first Pavia, Piacenza and Cremona. . . . Behind we have the Alps that separate us from France and which, with their snow-capped peaks surrounded by clouds seem to touch the sky. In front of my eyes is the Apennine and a countless number of lands and castles, among which that of Clastidio. . . . Finally at my feet I see the Po which with an ample bend winds its ways among the rich fields of the underlying plain."*

Fig. 9.2 The landscape of Collina Banina is characterized by polycultures with vineyards, fruit orchards and meadows

The integrity of the area is tied to the historical persistence of a highly subdivided network of holdings, although the characteristics of the cultivation have changed in time. Vine is the main cultivation, from which the DOC (Controlled Origin Denomination) label wine "San Colombano al Lambro" is produced, but vineyards continue to alternate with meadows and fruit orchards. The survival of the traditional landscape is partly due to the establishing of a PLIS (Local Park of Supercommunal Interest) called Parco della Collina di San Colombano by the provincial administrations of Milan, Pavia and Lodi. The Park Plan regulates the use of the territory of the hill and the urban and naturalistic interventions through both prescriptive norms and general guidelines. The type and the enacting procedures of the interventions stipulated by the Plan are not solely aimed at protecting the natural characteristics of the area but also at preserving established human activities, carried out in traditional forms.

Vulnerabilities are in part tied to the transformation of cultivations and in part to the fragmentation of the property. The small size of the holdings has often been a problem for their maintenance. For this reason, many properties have been allowed to grow wild, thus causing the loss of the agricultural characteristics that are the distinguishing sign of the local identity, in favor of the increase of woods which are gradually colonizing the abandoned areas (Fig. 9.2).

9.4 Morenic Hills of the Lower Garda Lake (45° 23′ 10″ N; 10° 39′ 55″ E)

The area in question corresponds to the hills of the lower Garda river located in the territories of the municipalities of Ponti sul Mincio, Monzambano, Cavriana and Solferino, in the province of Mantua. It can be accessed through provincial road SP 19, which connects Mantua to Peschiera del Garda. It extends for about 4,000 ha and consists in a series of gentle hills with an average altitude of 120 m a.s.l, between the southern shore of Lake Garda and the plain of Mantua, and is bordered by the Mincio river to the east and the Chiese to the west. The eastern part of the area is part of the Regional Park of the Mincio River, instituted by regional law n. 47, of September 8, 1984, later integrated by regional law 35/87, and is protected under the landscape law 1497/39. The morainic hills are currently shaped as two wide concentric semi-circles with their open end towards the plain, and date to the period of the two last glaciations. The geological substratum is made of morainic gravel, sometimes cemented, with strata of argillaceous alteration and presence of calcareous cobbles. The glacial deposits of the Garda river, shaped by the passing of time and by the action of the water, are endowed with a varied and abundant flora of great naturalistic importance.

The significance of the local landscape lies in the combination of the special environmental characteristics tied to the mild climate typical of the ancient Insubria region, combined with the historical persistence of agricultural activities and the beauty of the Garda scenery. Populated since the pre roman times, the area is characterized by a series of risings and small hills and is endowed with a particularly valuable environment thanks to the microclimate created by the Garda basin, which mitigates winters, making possible the widespread presence of vineyards and olive orchards, besides the woods, thus contributing to the original characteristics of the landscape. Hills alternate with barren fields and spring water ponds. Along with the natural vegetation, which includes willows, alders, downy oaks and European hop hornbeams, a typical feature of the cultural landscape is the presence of cypresses, introduced a long time ago, and commonly used to mark the ridge of hills, driveways and the bank road of the Virgilio canal. This canal, built in the 1920s, brings irrigation water from the dam of Ponti sul Mincio to the hilly area on the right bank of the Mincio. By exploiting the difference in altitude it also powers a small hydroelectric plant. On the southern slopes, we usually find terraced vineyards, which produce the DOC (Controlled Origin Denomination) label wine “Colli Morenici del Garda”; in fact, the climate is ideal for vine, which is widely present. The low water requirements of vine has favored its presence in the morainic hills up to the advent of irrigation, when it has often been replaced by forage.

The integrity of the landscape depends on the preservation of agriculture. Vineyards are the most widespread and interesting element, especially when terraced. As one can expect, given the extension of the area, there are parts in which both the expansion of urban areas and changes in agriculture have reduced the overall integrity of the landscape. Vineyards have been replaced by other cultivations and meadows

Fig. 9.3 The Low Garda Hills landscape is made of dry and irrigated meadows mixed with vineyards

have begun to be irrigated, modifying the aspect of the hilly areas, especially during the dry season. For this reason, alongside portions of great historical interest the rural landscape has also areas that have changed significantly.

The vulnerability of the area is tied to the tendency towards urbanization, which tends to create a marked continuity of buildings, and to intensification and further changes in agriculture. Agriculture currently occupies rural spaces which are being continuously eroded by urban expansion. Furthermore, the transformation of many farmhouses into secondary residences is altering one of the most significant aspects of agricultural landscape. The Coordinating Territorial Plan of the Province of Mantua calls for the preservation and extension of the intensive cultivation of vine in the morainic area. This is a clear signal of the Administration's intention to preserve the special qualities of the rural landscape, even if not in accord with the characteristics of historical landscape. Even the 2008–2011 Provincial Agricultural Plan establishes measures aimed at "merging holdings and preserving the unity of agricultural areas, to prevent the excessive fragmentation of the land. . . ." The same Provincial Agricultural Plan proposes "contracts of territorial protection" to be offered by one or more Communes, to integrate the income of farms who provide certain services. This could have a positive effect on the maintenance of the land, including smaller roads connecting holdings, localities and municipalities and bicycle routes, but also green areas, river banks, irrigation channels (Fig. 9.3).

9.5 Lemon Houses on the Garda Lake (45° 41′ 00″ N; 10° 39′ 00″ E)

The lemon houses area extends over a 300-meter-deep strip along the banks of Lake Garda, between Salò and Limone, in the municipalities of Salò, Gardone Riviera, Toscolano Maderno, Gargnano, Tignale, Tremosine, and Limone, all in the province of Brescia. The lemon houses are mostly in Maderno, Gargnano and Limone, on land mainly privately, for a small portion publicly owned. Since the houses lie along in the coastal strip of the lake, they are mostly accessible directly from SS 45/bis (Gardesana Occidentale) and secondary roads branching off from it. The banks of the Brescia side of the Garda Lake are made up of ceroid white limestone, oolithic limestone, gray limestone, and compact dolomitic stone, with frequent groundwater detritus and Wurmian morainic deposits. Gray clayish schist occurs locally. In the south part of the area are weakly cemented gravelly moraines with a clayish alteration stratum with maximum depths ranging from 1 to 2 m.

The area owes its significance to the historical persistence of the most characteristic cultivation of Lake Garda—introduced as early as the thirteenth century, possibly by the friars of the convent of San Francesco di Gargnano—and the aesthetic qualities of the Garda landscape. The citrus-groves landscape, like that of the Insubria region, has its origin in specific dynamics, the result of the interaction of environmental aspects and human action. It is characterized by a typically Mediterranean vegetation, rather untypical for the area's traditional Alpine and pre-Alpine environment, a result of the immigration of thermophilic southeastern plants in the postglacial period. The later cooling of the climate is believed to have led to the shrinking of this vegetation to the lake area, whose microclimate has allowed it to survive until today. To make citrus growing possible at this latitude (the northernmost in the world for citrus), as early as the sixteenth century imposing structures called *limonaie* were built, consisting of large rectangular hothouses on long terraces. *Limonaie* have high perimeter stone walls on three sides, and pillars up to 10 m tall connected by a framework of chestnut-wood beams. Each pillar is joined to the two adjacent pillars on the same row by three parallel maple beams, to which movable shutters were attached to close off the open side of the *limonaia*. From November to March, to protect the orchard from the cold the *limonaie* were closed with large wooden movable partitions with glass windows, and covered with wooden-plank roofs. These structures were thus true greenhouses. The trees, being planted into deep soil and supported by a chestnut-wood frame, attained the maximum of their growth. The irrigation network consisted of runnels, usually built of limestone, that conveyed water from a cistern, a well or a stream. On especially cold nights, or when it snowed, the gardeners would light olivewood fires inside the hothouse, keeping them warm enough to keep the trees alive. The whole surrounding land was planned around the *limonaie*: cypress trees were planted to serve as windbreakers, to protect the orchards from rocks tumbling down the steep slopes of the above-lying mountains, and to provide shade to the water cisterns; the farmers looked for natural springs, or used the water of the lake; paths were built to allow access to all the *limonaie*; and commercial infrastructures

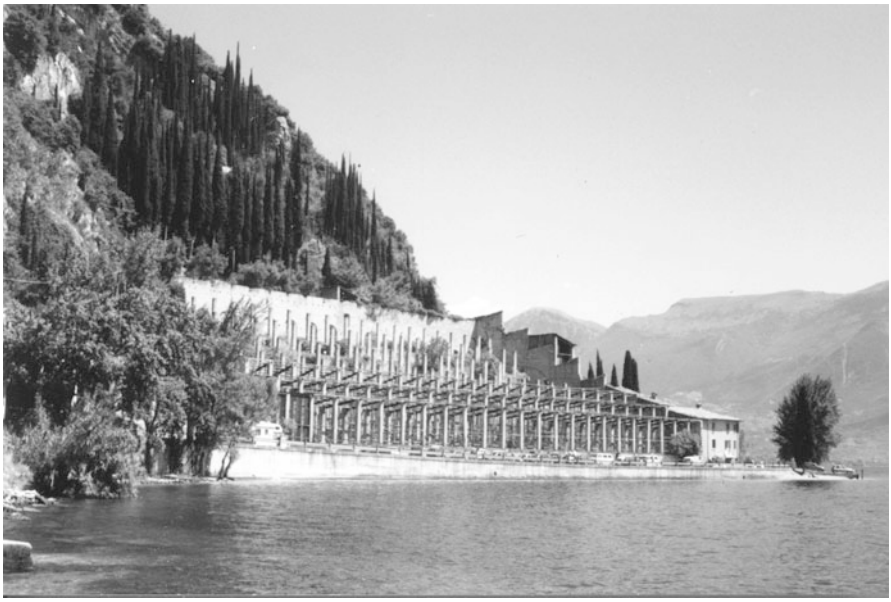

Fig. 9.4 The lemon houses, existing since the thirteenth century, are one of the most significant components of the Garda landscape

were set up. The *limonaie* area are part of a larger area placed under planning restrictions for its landscape value as early as the 1950s, in application of the landscape law n. 1497 of 1939, and are included in the Alto Garda Bresciano Regional Park, established in 1989.

As regards integrity, most of the citrus-growing areas have been converted to other agricultural uses or to private gardens, and in some cases are greatly deteriorated or changed. Only ten or so *limonaie* are still active and productive, thanks to the commitment of enthusiasts who operate them as a hobby or tourist attraction. The historical agrarian landscape, however, in spite of recent urban growth and land transformation, is still partially preserved. Many *limonaie*, in various states of conservation, can still be seen in the area. In recent years some publicly owned *limonaie* in the communes of Tignale and Limone have been restored and made into museums, testimonies of the historical cultivation the area was famous for.

The vulnerability of the *limonaie* landscape depends on the loss of the profitability of this cultivation system. Ever since local farmers gave up lemon growing, the *limonaie* have lost the economic function they had been created for. However, they have retained their importance as a landscape feature that makes this stretch of the banks of the Garda absolutely unique. It is hence urgent to formulate policies to protect, preserve, and develop this historically complex landscape by finding compatible uses and defining management criteria (Fig. 9.4).

9.6 The *marcite* of the Irrigated Plain (Ticino Area: 45° 17′ 00″ N; 08° 53′ 00″ E—South Milan Area: 45° 21′ 43″ N; 9° 05′ 08″ E)

The *marcite* landscape has a total extension of about 560 ha, comprising scattered areas in the irrigated plain between the Ticino and Adda rivers, in the provinces of Pavia (municipalities of Bernate Ticino, Morimondo and Vigevano) and Milan (municipalities of Albairate, Buccinasco, Calvignasco, Lacchiarella, Melzo, Noviglio, Peschiera Borromeo, Settala, and Zibido San Giacomo, as well as others). These areas are flatlands, with average altitudes around 100 m a.s.l. Some of them lie within the Ticino Valley Regional Park, the South Milan Agricultural Park, the Basso Corso e Sponde del Ticino SCI and SPZ, and the Oasi di Lacchiarella SCI. All the *marcite* lie onto a substratum of alluvial origin composed of sand and gravelly sand, with a brownish alteration stratum between 40 and 60 cm deep, forming the so called *diluvium recente.*

The *marcite* are a very old type of permanently irrigated meadows owing their significance to their characteristic hydraulic-agrarian structure and their ecological role. They are large, slightly inclined rectangular plots. In their higher parts, water runs in small channels called *maestri* or *adacquatori*, from which it overflows, inundating the meadow and forming a thin tepid sheet over the grass cover. In the lower part of the meadow, drainage channels collect the excess. This cultivation method was introduced in the early Middle Ages, when Cistercian monks from the abbey of Chiaravalle, Umiliati monks from Vidoboldone, Morimondo and Bernate, and the Milanese Sforza family built a dense network of large and small artificial canals to reclaim the plain, place new land under cultivation, and control water distribution the year round. These works are partially aligned with the earlier ancient Roman centuriation of the area. The constant flow of water from underground springs called *risorgive* or irrigation canals, and its almost constant temperature prevent frost, even in the coldest months. Thus, grass grows lushly, allowing mowing up to 10–12 times a year, even under adverse climatic conditions. The *marcite* were known as the "green gold of Lombardy", because until the postwar period they allowed the expansion of livestock raising in the plain. They also have an important ecological role as a refuge for many aquatic and marsh plant and animal species.

The integrity of the *marcite* areas is still good. The *marcite* of Morimondo, extending over 23 ha around the homonymous abbey, still retain the canal grid layout and field sizes of the Middle Ages, although only a small part is submerged in the winter and hence remains "green". At Bernate, the *marcita* area, still owned by the Curia of Milan, extends over 13 ha. It is completely surrounded by woods and submerged in the wintertime. A long-standing farming business still cultivates it with care and commitment. The 72 ha of *marcite* at the Sforzesca are the property of Prince Castelbarco Albani Gropallo. The cluster of buildings in the middle of the area still retain features of the original fifteenth-century buildings, although around them many residential houses have sprouted with building characteristics that are

Fig. 9.5 The *marcite* are a management system introduced in the early Middle Ages by Cistercians and Umiliati monks

completely extraneous to the local agrarian landscape. In the *marcite* themselves, the original size of the sloping "wings" is still recognizable, as are water canals, drains, and sluice gates with their partially restored fixtures. Maintenance and management have been neglected in recent times, being costly and of no direct usefulness to agricultural production. This has led in many cases to deterioration of the grass cover and a loss of its botanical quality and utility as fodder.

In areas around Milan—even those now surrounded by urban sprawl, such as the Parks of Ticinello and Cave—there are still 225 ha of *marcite* still retaining their double or staggered "wing" structure and maintained using mechanical means. In the South Milan Agricultural Park, some farmers produce quality milk from livestock entirely fed with fresh fodder from *marcite*, notably the *marcita* of Cascina Tavernasco at Noviglio.

The vulnerability of these plots is high, because they need constant maintenance and specific subsidies are scarce. Hence, *marcite* are often "broken" and converted into grain fields. This trend is leading to the loss of one of the most distinctive historical features of the Po River plain. In livestock feeding, fresh grass has been replaced by silate, which is less expensive and available the year round. It is hence difficult to motivate farmers to resume cultivation of *marcite*, which require constant

and costly maintenance and an in-depth knowledge of water managing techniques. Irrigation water in general is scarce today, including that from historical springs, once an important source for the *marcite*, which today have been largely abandoned. Since 1988, the Ticino Valley Regional Park has been trying to give out subsidies to farmers to encourage them to maintain the *marcite* that are most significant from a historical and landscape point of view. Thanks to the enactment of the Progetto Speciale Agricoltura of the Lombardy regional government, the South Milan Agricultural Park has conducted a census of *marcite* and allocated subsidies for their maintenance. In 2008, the park inaugurated a visitor program, with itineraries going out from ten farmhouses to the *marcite* and other places of historical, naturalistic and architectural interest in the area. There are plans to create an "Association of *Marcita* Farmers of the South Milan Agricultural Park" to improve external visibility and nurture a sense of identity among farmers (Figs. 9.5, 9.6)

Land use 2009	Surface (ha)	Surface (%)
Water body	4.69	1.09
Urban area and courtyard	39.86	9.30
Arboricolture	110.21	25.72
Shrubland	5.42	1.26
Mixed wood of broad-leaves	28.33	6.61
Fallow	8.99	2.10
Marcita (irrigated meadow)	90.03	21.01
Vegetable garden	1.18	0.28
Meadow	0.39	0.09
Rice field	47.80	11.16
Arable land	79.27	18.50
Riparian vegetation	12.29	2.87
Total	*428.44*	*100.00*

Evaluating indices of landscape	
Number of land uses	12
Number of patches	222
Total surface area (ha)	428.44
Average surface area of patches (ha)	1.93
Average surface area of *marcite* (ha)	4.74
Average surface area of forest patches (ha)	1.64
Length canals (m)	57.519
Hill's diversity number	6.99
Class of landscape integrity (I–VI)	II

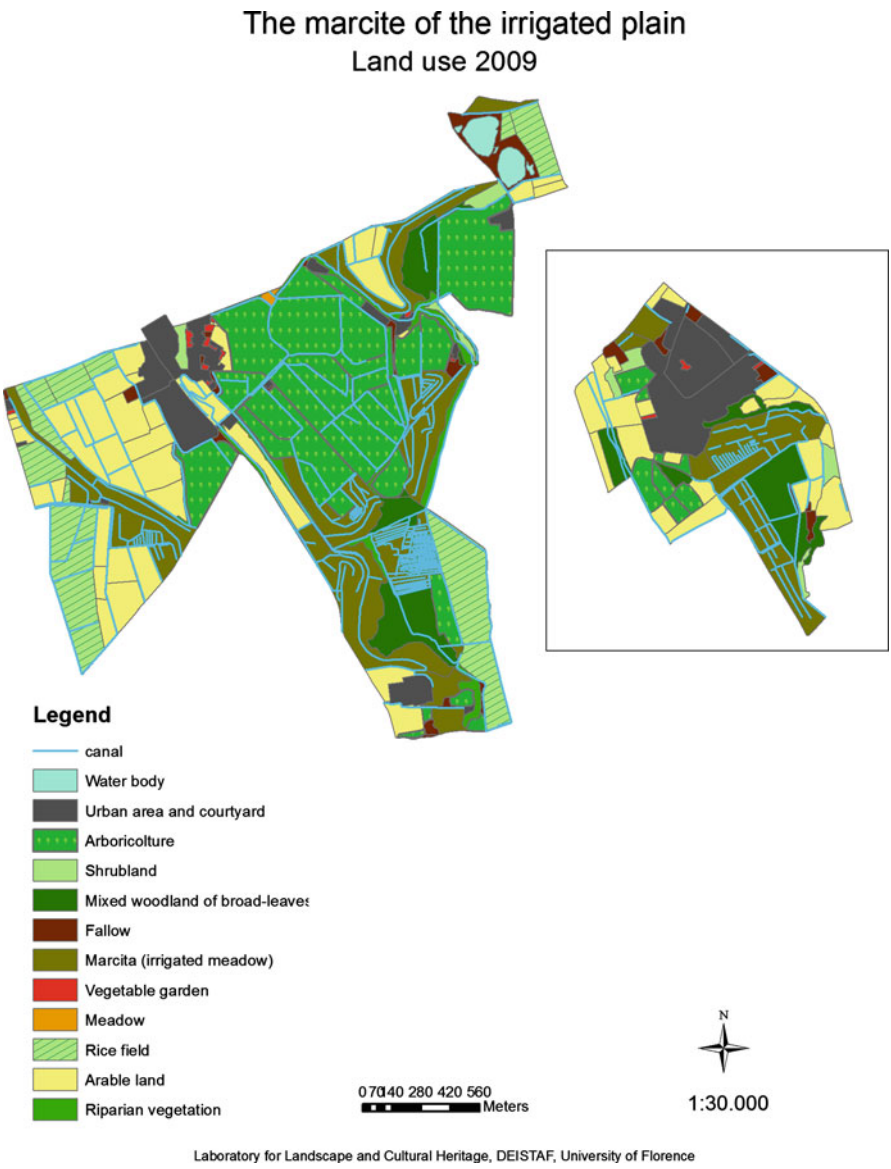

Fig. 9.6 The *marcite* are an ancient and effective type of permanently irrigated meadows. The surveyed area is covered by *marcite* for 21 % of its whole surface. The structure of the landscape is characterized by large-sized patches where water runs in small channels called *maestri* or *adacquatori*, from which it overflows, inundating the meadow and forming a thin tepid sheet over the grass cover. The channels for irrigation extend for about 57,519 m. The *marcite* landscape comprises scattered areas in the plain between Ticino and Adda rivers. Therefore, the assessment of the integrity cannot consider a single portion of territory, but rather scattered areas that need to be surveyed separately

9.7 Bird-catching Sites in Lombardy (Around Brescia: 46° 13′ 36″ N; 10° 25′ 00″ E—Around Bergamo: 45° 46′ 27″ N; 9° 38′ 43″ E)

This landscape was selected for the presence of *uccellande*, vegetable structures used for hunting locally known as *roccoli* and *bresciane*. Today they are found over an area with an overall extension of about 1,550 ha. They are often indicated in the Italian Military Geographical Institute maps. The area of Lombardy where many *uccellande* are still preserved lies within several municipalities in the provinces of Bergamo (notably in the municipalities of Colli di Bergamo, Val Seriana, Val Brembana, Val Gandino, and Val Cavallina) and Brescia (Brescian Alto Garda, Val Sabbia, and Val Trompia). They often can only be reached on foot. Many of these structures lie within the Regional Parks of Colli di Bergamo, Campo dei Fiori, Alto Garda Bresciano, Adda Nord, Groane, Valle del Lambro, Pineta di Appiano Gentile e Tradate, or within the Canto Alto e Valle del Giongo SCI. Some of these areas are under landscape restrictions. The *uccellande* are mainly concentrated in the Prealpine region. They lie at obligatory passage points along bird migration routes, such as rises, hills or mountain passes, in wooded areas or fields that are more likely to draw birds.

These structures, made by modeling trees into traps for various avian species, were once widespread in Italy. They owe their significance to their historical persistence and uniqueness. *Roccoli* are documented in Italy at least as early as the 1400s, especially in Lombardy and Veneto. A 1931 census reports 880 *uccellande* in Lombardy and 587 in Veneto. *Uccellande* have a round or horseshoe-shaped plan, about 50–60 m in diameter. They are bordered with trees (usually hornbeam, *Carpinus betulus*) arranged and pruned so as to form windowed vegetable tunnels concealing vertical bird-catching nets. They also have a wooden pergola, known as *tondo*,completely covered with regularly pruned vegetation. Annexed to this is a three-story masonry tower, the *casello*, or a hut, hidden in dense vegetation, where the hunter would hide. In the innermost part of the *roccolo* is the highest tree of all, surrounded by a grove of progressively shorter trees. In cultivated areas in plains or low hills, *uccellande* with rectangular plans were sometimes used. These are known as *bresciane*. They differ from *roccoli* not just in plan, but also for the absence of trees inside the pergola, which is occupied, instead, by grass or pasture shrubs. Thus, *roccoli* are elaborate "vegetable buildings" requiring continuous and programmed maintenance. This was once performed by *roccolisti* (or *roccolanti*). A *roccolo* was often associated with other *roccoli*, forming a complex, highly distinctive landscape system in which practical utility (birding used to be an important source of nourishment for foothill and mountain populations) went hand in hand with aesthetical and decorative considerations.

As regards integrity, many *roccoli* are still quite well preserved. Some are kept in activity employing traditional techniques, capturing birds for ringing for scientific purposes or to supply decoys for species whose hunting is allowed in Lombardy. In the region, about forty *roccoli* are authorized to capture over 40,000 birds. Other *roccoli* still retaining their arboreal structure are used as bird-watching stations or as a feature in public or private parks. Most *roccoli*, however, have disappeared or are reduced

Fig. 9.7 View of a bird-catching site in Colli di Bergamo Regional Park. It still conserves its historic architectural and vegetational components

to vestiges integrated into the woods. Censuses of *roccoli* recently conducted in the Val Gandino and in regional parks where they occur located over 200, in different states of preservation. Of the recorded specimens, only about 10 % are still used for hunting. The rest have reverted to the wild or become a feature in private parks.

The vulnerability of these peculiar arboreal structures principally depends on the ceasing of their use for hunting ever since Law 799/1967 forbade this form of birding. Furthermore, *uccellande* are also threatened by improper use, deterioration, and radically altering works, which are leading to their gradual disappearance. It is thus necessary to take account of *uccellande* in agricultural policies and land and landscape planning. They are features of the local landscape and environmental heritage, testimonies of an ancient folk culture that are worth conserving and maintaining as a complex system that is highly characteristic of the rural landscape of Lombardy and Veneto (Fig. 9.7).

9.8 Val Muggiasca (46° 02′ 00″ N; 9° 20′ 00″ E)

The mountain landscape system of Muggiasca extends over about 1,000 ha, mainly privately owned. It lies within the municipality of Vendrogno (LC), along the right bank of the Pioverna torrent, before it expands to form the Bellano sul Lario alluvial fan. The altitude of the area within the territory of the commune ranges from 265 to

1,800 m a.s.l. Vendrogno can be reached from Bellano, on the east bank of the Como Lake, by driving 5.5 km on the road going through Pradello. Its sub-municipalities (Sanico, Mornico, Mosnico, Noceno, Inesio and Comasira) extend up the southwest slopes of Mount Muggio, from which the area derives its name of Muggiasca. The area is placed under landscape restrictions as per law n. 431/85. The Val Muggiasca, extending from Bellano to Tartavalle, is a narrow glacial trough of torrential origin. Water erosion and the calcareous nature of the Prealps have given rise to morphological features such as glacial kettles (Tomb of Taino), cascades, and residual glacial morphologies such as terraces and scattered boulders. Monte Muggio, which overlooks the valley, is a large mountain with a rounded shape that stands in complete isolation, offering a view of the Valsassina, the lakes of Como and Lugano, Monte Rosa, Monte Cervino and the Swiss Alps. The area lies within the northern sub-Alpine strip of the province of Lecco, which is characterized by the presence of metamorphic rock and some important mountain chains. Hydrographically, the area belongs to the Adda basin, a sub-basin of the Pioverna torrent.

The landscape system of the Val Muggiasca owes its significance to the historical persistence of the typical physical features—woods alternating with pastures, meadows, small terraces and contour terraces—associated with "vertical" farming and livestock-raising; that is, the seasonal migration of farmers, herdsmen and livestock from the lower versants in the winter to the upper ones in the summer. This practice, known as *alpeggio*, dates all the way back to the Middle Ages. Beginning from the bottom, first come the permanent settlements, with small terraces where vegetables, potatoes, rye, buckwheat, and especially grapevine are grown. From here all the way up to the high altitude zone are meadows and pastures interspersed with large woods with chestnut trees, including some monumental ones. The permanent settlements are of medieval origin. They are of the centered Alpine type, with homes separated from stables, barns, and other farm buildings. There are many churches, whose steeples are a prominent feature of the settlements. Besides local routes such as paths and mule-tracks, important ancient routes connect the banks of the lake with the Valsassina.

Similar landscapes systems are found in many other valleys in the Alps, but the Val Muggiasca owes its integrity to the preservation through the centuries of its historical use, down to the present day. On the north versant of Monte Muggio, which has been only slightly impacted by anthropic activities, vast woods are still present. The Monte Muggio area includes many pasture areas. Notably, the *alpeggi* of Chiaro and Camaggiore are still active. Indeed, meadows and pastures are a significant landscape feature of the area. One of its most characterizing structural elements are contour terraces and terraced meadows. These can be seen especially in the wintertime from the opposite bank of the Pioverna. The villages still retain strong Medieval historical traits. A dense web of foot trails still connect the seasonal permanence zones and residential clusters. Some of the mule-tracks and paths, however, are asphalted today to allow motor traffic. The local population display a quite good awareness of their history. Since July 2008, a "Museum of Milk and of the History of the Muggiasca" has been open in Vendrogno, housed in a former municipal dairy.

Fig. 9.8 The pastoral landscapes cannot be separated from the grazing activities needed to maintain them

As regards vulnerability, it is increasing as a result of the partial abandonment of the valley versants, the decline of agriculture and livestock raising, and the consequent abandonment of pastures, especially the least accessible ones. The woods are gradually extending over terraced fields and meadows. More tracks and trails may to be asphalted in the future, allowing motor vehicle traffic in excess of the area's capacity. New uses of rural buildings have led to often incongruous renovations that do not blend well into the local landscape (Fig. 9.8).

9.9 Terraced Vineyards of the Valtellina (46° 10′ 31″ N; 09° 54′ 05″ E)

The terraced vineyards of the Valtellina extend over about 500 ha, with altitudes ranging between 300 and 700 m a.s.l., on the Rhetian versant of the valley, facing south. They lie within the municipalities of Sondrio, Montagna in Valtellina, Poggiridenti and Tresivio (SO), and are mainly privately owned. The area is partially included in the Orobie Valtellinesi Regional Park, now an EU Special Protection Zones. The area is accessible by SS 38, which runs through the valley. To reach the vineyards, one drives eastward for about 3 km from the center of Sondrio to Piano. From here,

one takes Via Don Guanella, which goes up the versant to Montagna in Valtellina. The other communes lie eastward from here along the versant, at the same altitude. The Valtellina is located in the extreme north of Lombardy, along the Swiss border. It extends for 119 km from east to west, along the upper stretch of the course of the Adda, down to the Como Lake. There are Pleistocene glacial deposits on the valley bottom, and schist and mica schist between the valley bottom and the lower versants. The latter are in many cases the result of recent alluvial fanning. The main versants, instead, are constituted by moraines of post-Wurmian origin, with abundant gneiss and migmatite formations.

The area owes its significance to the historical persistence of viticulture on dry-stone terraces along especially steep slopes, with gradients sometimes higher than 70 %. The result is a spectacular landscape. Grapevine is grown all over the Valtellina, especially between Ardenno (16 km west of Sondrio) and Tirano (22 km east of Sondrio). The area selected for the present work is hence the central part of the valley. Historical documents indicate that these terraces were mainly built between the tenth and fourteenth centuries, allowing the farming of very acclivitous slopes by strenuous shaping of the mountainsides. It is mainly monks who started the interminable work of clearing woodland and building terraces to allow the growing of grapevine along the Rhetian versant. Viticulture attained its peak expansion in the nineteenth century, when over 6,000 ha of vineyards were recorded in the valley, vs. about 1,000 recorded in 2006. They are arranged onto narrow terraces that are themselves quite steep. Human occupation of the slope is rhythmically cadenced by housing clusters lying at intervals along tracks halfway up the Rhetian versant. As a rule, terraces were built from the bottom up. A low wall was erected with stones usually obtained from the immediately overlying slope. Some debris was probably spread onto the whole surface of the cut to improve drainage and reduce the push of the earth against the wall. Above this draining stratum, a layer of manure mixed with earth from the cut was spread. In areas where emerging boulders abound, one commonly finds terraces onto small rock shelves, bordered by a wall. These terraces were covered with earth dug up in nearby cavities. Better quality earth was sometimes brought up from below, but only as a last resource. The Valtellina has a much more favorable climate than other mountain areas at the same latitude, allowing the production of an excellent Nebbiolo wine, also favored by other concomitant factors. Due to the valley's west-east alignment, its whole northern versant faces south. Its steepness increases its irradiation, since at the latitude of Valtellina it allows a higher concentration of solar energy than in level areas. The dry-stone walls also contribute to the maturation of the grapes by absorbing heat during the warmer hours and releasing it during the cooler ones. These characteristics, along with the erosion reduction and hydrogeological stability ensured by the terraces, contribute to the environmental significance of this historical landscape system. The area produces quality wine. DOC (Controlled Origin Denomination) recognition has been granted to Valtellina Rosso, and DOCG (Controlled and Guaranteed Origin Denomination) to Valtellina Superiore and Valtellina Sforzato.

Fig. 9.9 The terraces of Valtellina date back to the tenth–fourteenth century. They are characterized by peculiar building techniques and specific landscape features

The selected area's integrity lies in the fact that the present viticultural landscape still maintains not only its terraces, but also most of the extension it had in the nineteenth century, unlike what happened in other parts of the Valtellina. Some parts, however, have been abandoned and reclaimed by the forest. Some owners have switched their terrace vineyards from *rittocchino* to *girapoggio*, partially changing the shape of their vineyards, although terrace structure has been left unaltered. Settlement expansion has remained limited and has followed contour lines.

As regards vulnerability, objective difficulties in the cultivation of terraced areas and high production costs are gradually leading to the abandonment of farmland, not just at high altitudes, but also, in recent years, at lower altitudes where landscape and environmental value is higher. Wine production in the area can still guarantee very high quality, but a collective effort is called for to safeguard a product with unique characteristics, not reproducible in other habitats. It is also important to maintain the terraces as a protection against hydrogeological risk. The area is characterized by high property fragmentation, low mechanization, difficulties in transporting the grapes, and high access costs. In 2003, local producers formed the Consorzio Tutela Vini di Valtellina, and local institutions established the ProVinea non-profit foundation to protect the land, landscape and vineyard terraces of the province of Sondrio, and safeguard and promote local cultural-historical traditions

and cultural and environmental heritage. ProVinea engages in actions to valorize and protect the local landscape and environment, such as the maintenance of structures with landscape value, retaining walls and routes, especially in the terraced vineyard system. The foundation collaborates with the authorities and local institutions to achieve its objectives, and takes action, legal as well as otherwise, in defense of the environmental, landscape and cultural balance of the local wine country (Figs. 9.9, 9.10).

Land use 2009	Surface (ha)	Surface (%)
Water body	0.58	0.08
Bare rock	0.35	0.05
Urban area and courtyard	135.46	19,63
Arboricolture	0.36	0.05
Shrubland	23.68	3.43
Archeological area	0.45	0.07
Woodland	146.43	21,22
Fruit orchard	15.67	2.27
Unproductive	0.82	0.12
Fallow	40.87	5.92
Unclassified	2.48	0.36
Olive grove	0.89	0.13
Terraced vegetable garden	25,74	3.73
Terreced vegetable garden with fruit orchard	1.99	0.29
Pasture	0.28	0.04
Meadow	26.87	3.89
Meadow with tree	10.89	1.58
Terraced meadow	5.01	0.73
Arable land	4,61	0.67
Arable land with fruit orchard	1.81	0.26
Arable land with vine	0.07	0.01
Vineyard	3.06	0.44
Terraced vineyard planted along the contour of the hill	16.30	2.36
Terraced vineyard planted perpendicular to the slope	219.55	31.82
Vine with tree	0.27	0.04
Abandoned terraced vineyard	5.21	0.76
Nursery	0.28	0.04
Total	*690.00*	*100.00*

Evaluating indices of landscape	
Number of land uses	27
Number of patches	2,186
Total surface area (ha)	690.00
Average surface area of patches (ha)	0.32
Average surface area of arable land patches (ha)	0.23
Average surface area of forest patches (ha)	0.74
Hill's diversity number	7.49
Class of landscape integrity (I–VI)	IV

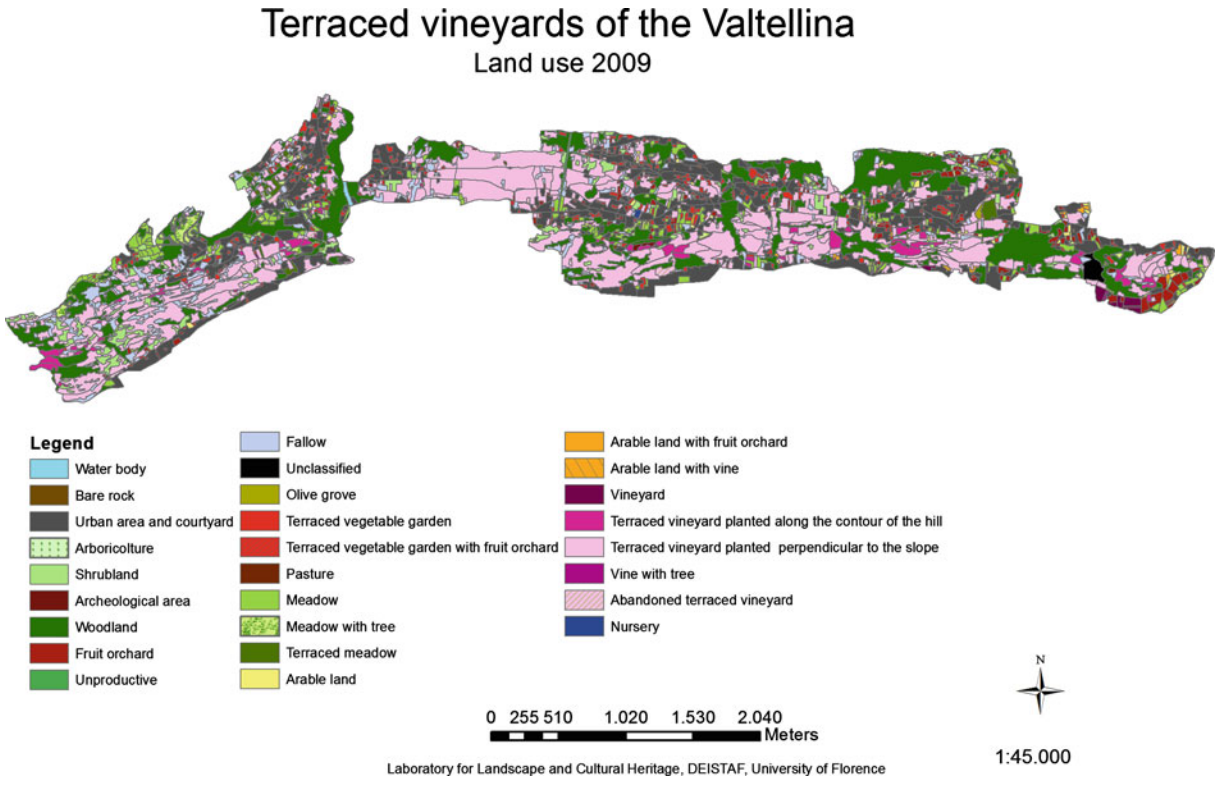

Fig. 9.10 The landscape of the Valtellina is characterized by dry-stone terraced vineyards and other mixed crops interrupted by small woodlands on very steep mountain slopes. Monks started to build terraces between the eleventh and fourteenth century. The vineyards occupy 31.8 % of the surface, mixed crops and orchards approximately 5 %, while the forests extend for 21.2 %. Several land uses and small patches characterize the landscape mosaic, with a very high level of fragmentation. As regards to the agricultural sector patches shows an average area of only 0.23 ha. Overall, the historical landscape has a high level of integrity

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