



“Wilderness”: what it means when it becomes a reality—a case study from the southwestern Alps

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Abstract

Within the framework of the transdisciplinary research project “Changes in alpine landscapes resulting from a decline in land use in the Val Grande National Park and Strona Valley—from rural landscape to wilderness”, the impacts of uncontrolled nature development on the landscape’s structural diversity, plant species richness, as well as on the local population and tourists were investigated. The study area was the community of Premosello Chiovenda in the Val Grande National Park—“Italy’s largest wilderness area”. In order to achieve reliable results, methods for conducting historical landscape analysis, ecological inventories and empirical–social research were combined. As a result of land abandonment, the floristic species richness is decreasing in higher successional stages, and depending on the altitude, the structural diversity of the landscape is changing. Wildfires in the successional communities pose threats to the neighbouring villages. Nevertheless, many rural and cultural landscape characteristics persist, and past uses continue to have a significant impact on future landscape development. The main impacts on the inhabitants are psychological and economic in nature. Around the villages, they regard the effects of abandonment in a very negative light. Visitors of the area judge the consequences of land abandonment differently. While they regard the resulting landscape’s wildness positively, they also regret the cultural losses suffered by rural communities. If the abandoning processes continue, rural landscape and its associated habitats will be lost. Despite this, new habitats, such as those resulting from ecosystem dynamics, will form. The evolving landscape is not, however, hospitable as a living space for man. The characteristics intrinsic to the landscape in the absence of its productive use and maintenance render it uninhabitable. A reasonable scenario for Premosello Chiovenda should provide the coexistence of dynamic, “wild” areas, free from further agri- or silvicultural uses and areas of cultural importance, where traditional and innovative forms of land use should be encouraged and developed. In the future, decision-makers should be aware of the positive and negative aspects of a large-scale rewilding, and all stakeholders, especially the affected local communities, should be included in any decision making process that concerns the establishment of protected areas which are left to develop without human control.

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1. Introduction

Since World War II, traditional land use practices have been in steady decline throughout many of Europe’s rural landscapes, such as in the Alps and in various other highland regions. As a result, once

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cultivated areas are returning to forests through the process of natural succession. Over the past 20 years, the establishment of new “wilderness areas” in such places has been increasingly supported by a growing number of researchers and politicians (Zunino, 1980; Broggi, 1995).

In 1992, as a result of this growing support, 12,000 ha of land in the southwest alpine Val Grande were declared a national park and “the largest wilderness area of the Alps and Italy”—“La più grande area Wilderness delle Alpi e d’Italia” (Olmi, 2002).¹ Large areas of this park had, however, been cultivated by humans since the Middle Ages. Only shortly following World War II were many of these lands abandoned. According to the World Conservation Union, a wilderness area should be “a large area of unmodified or slightly modified land . . . significantly free from direct human intervention” (EUOPARC and IUCN, 2000). In contrast to this concept the national park statutes (*Gazzetta ufficiale della Repubblica Italiana*, 1991) only exclude agro-silvo-pastoral land uses on the 950 ha core zone (zone A).

While numerous ideas and visions about the spiritual and aesthetic attributes of “a new Central European wilderness” have been put forward (Bibelriether, 1998; Weinzierl, 1999), only few studies have documented specific ecological and socio-cultural effects of wilderness development in areas where it is being encouraged as a nature conservation strategy. Wilderness should be “wild” (autonomous, self-organising, uncontrolled) (Turner, 1996) and “natural” (not influenced by humans) (Cole, 2001). Hence we decided to study the impacts of unhindered nature development on the landscape’s structural diversity, the richness of plant species, as well as on locals and tourists in the first, so-called “alpine wilderness area”.

The research in the Val Grande National Park is part of the ongoing project “Changes in alpine landscapes resulting from a decline in land use in the Val Grande National Park and Strona Valley—from rural landscape to wilderness”. The objective of this project is to develop perspectives for the future of the national park community of Premosello Chiovenda and the Upper Strona Valley.

2. Study area

The Val Grande National Park is situated in the northeast of the Italian Piemonte region, between the Ossola Valley and Lake Maggiore (Fig. 1). The area is characterised by a high level of precipitation, averaging 2000 mm annually (Valesia, 1993). As a part of the Val Grande National Park, the territory of Premosello is divided into various park zones (Fig. 2), each having a different purpose.

One half of the municipal territory is situated on the northeastern slope of the Pizzo delle Pecore and the Pizzo Proman, which faces the Val Grande (zones B and C). This slope is designated as a nature protection zone, in which traditional agro-silvo-pastoral uses are possible but neither existent nor planned. As this slope is relatively isolated in contrast to the zone D, which is located just within the periphery of the national park, the zones B and C are considered by many locals and the national park administration to constitute the park’s “true wilderness”.

The other half of Premosello’s territory is situated on the southwestern slopes of the same mountains and faces the Ossola Valley. According to the national park statutes (*Gazzetta ufficiale della Repubblica Italiana*, 1991), this slope is largely designated as a park zone in which the traditional culture is supposed to be promoted (zone D). But despite this designation, land use continues to decline. Today, traditional land use practices, such as the herding of cows and goats as well as the cultivation of vineyards and orchards, are restricted to areas around the valley villages (e.g. Premosello and Colloro) and some pre-Alps (e.g. Alpe La Piana). Most of the previously cultivated areas have been abandoned and are presently in various stages of succession. The traditional land use system, which had utilised the valley villages, pre-Alps and high Alps, came to an end after Premosello’s last alpine pasture was abandoned on Alpe Serena in 1969.

3. Methods

In order to attain reliable information about the ecological and social effects of “rewilding” (a process in which a formerly cultivated landscape develops without human control), methods for conducting historical landscape analysis, ecological inventories and

¹ Franca Olmi is the actual National Park President.

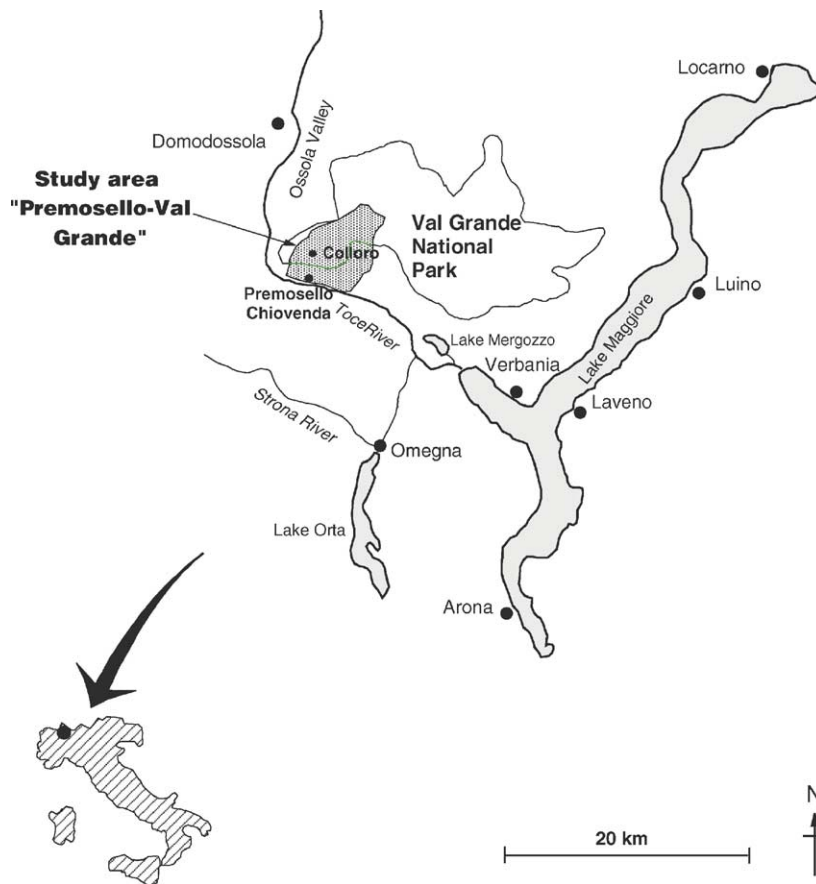


Fig. 1. Geographic location of the study area within the Lake Maggiore region of northern Italy.

empirical–social research were combined in accordance with the transdisciplinary research strategy (Jaeger and Scheringer, 1998). Historical landscape analysis was used to reconstruct the study area's traditional rural landscape (Konold, 1996). The primary sources used for this purpose came from the local and regional archives, such as letters, land use statistics, old land registers and maps, as well as photographs (Rackham, 1986). One particularly important historical source was the Rabbini land register from the middle of the 19th century.² The historical land use map from this land register was georeferenced and digitalised in order to compare it with the present situation. In addition to these archival materials,

² Mappa e catasto Rabbini, 1867: communal archive of Premosello Chiovenda.

persistent traditional landscape elements, including planar elements (e.g. pastures, vineyards), linear elements (e.g. mule paths, mountain paths) and point elements (e.g. charcoal burning platforms, clearance mounds), were directly mapped during inspection walks through the landscape. Historical methods were complemented by interviews with people who had witnessed land use change in the area (Fogerty, 2001) and by the evaluation of secondary sources.

The scientific inventory of the current vegetation status was carried out by means of a synoptic comparison of vegetation tables based on vegetation relevés using the Braun-Blanquet (1964) method and lists of plant species, furthermore by means of vegetation mapping and vegetation–transect analysis (Ellenberg, 1956; Glavac, 1996). The transect method was used to document changes in floristic species diversity along

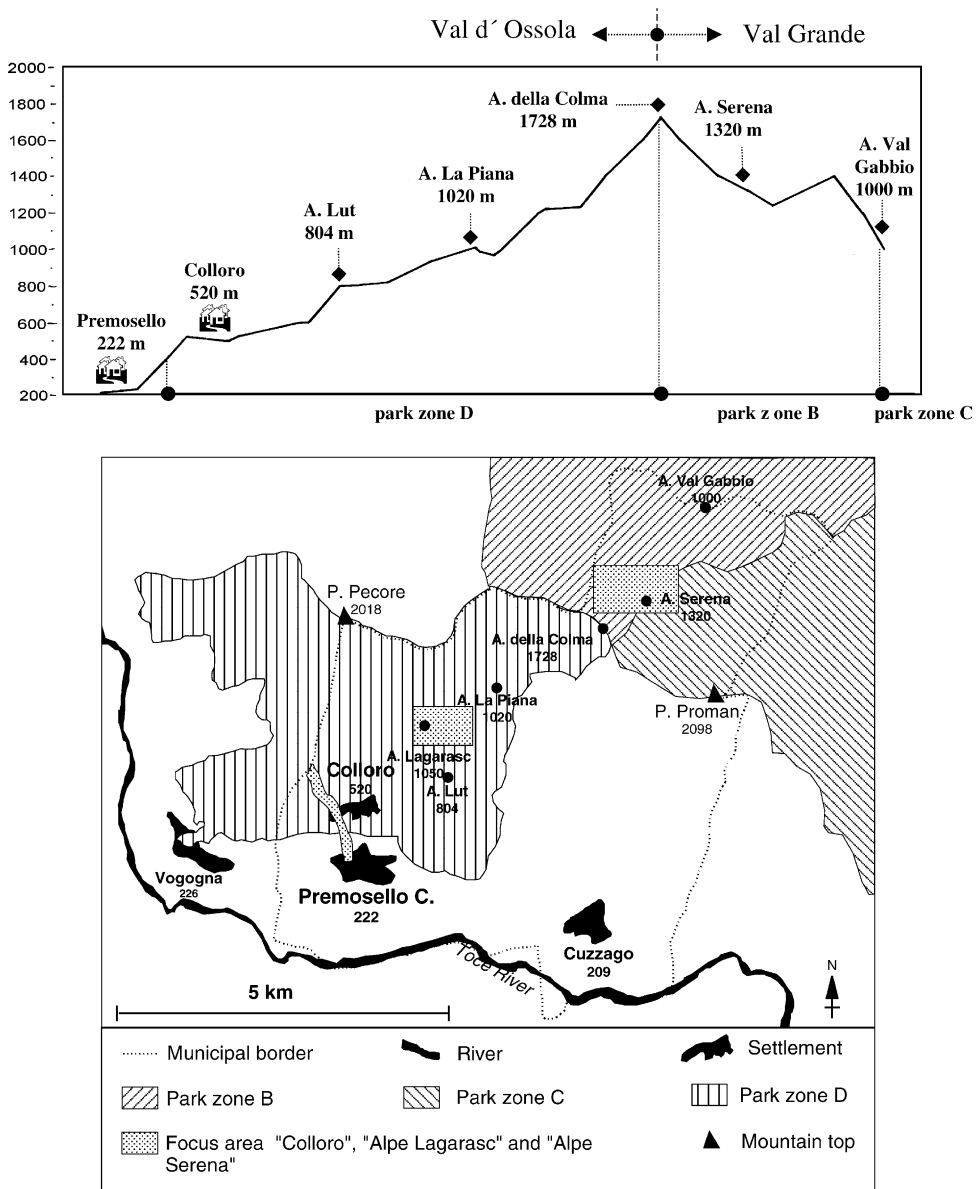


Fig. 2. Transect through the mountainous area of Premosello Chiovenda and its park zones.

successional gradients. The transects were placed on three abandoned alpine pastures. In each case, the starting points were situated in meadows close to the most recently abandoned alpine huts. Each transect ended further away from these huts in areas where higher successional stages had been reached. The longest transect was 550 m in length. Along each tran-

sect, vegetation types were recorded at 50 m intervals. In order to document the changes in vegetation cover over time, aerial photographs from the years 1954, 1970 and 1991 were compared and interpreted with the help of a binocular eyepiece (Hildebrandt, 1996). The gained information was copied to an actual orthophoto map, digitalised and georeferenced. The

Table 1
Population, sample size and return rate of the opinion poll at Premosello and Colloro

	Colloro		Premosello	
	18–30	31–60	18–30	31–60
Population (%)	26 (100)	75 (100)	230 (100)	639 (100)
Sample (%)	14 (54)	38 (51)	46 (20)	127 (20)
Return	16	32	28	75
Return rate (%)	114	84	61	59

The values given in parentheses are percentages.

analysis of the carbon/nitrogen ratio of soil samples from an abandoned alpine pasture further contributed to ecologically relevant information (Schlichting et al., 1995).

Sociological studies were aimed at assessing the prevalent perception among people in the region with regard to the present situation and their future expectations (Berg, 1989; Fowler, 2002). An opinion poll addressing the topics “life in the village”, “traditional agriculture and its products” and “landscape and nature” was elaborated on through participating observation throughout the 3 years of our study period. The survey was based on two types of questionnaires directed at a random sample of residents taken from the electoral register of Premosello and Colloro. Sixty of the polled residents were between the ages of 18 and 30 years; 165 residents were between 31 and 60 years (total return rate 67%, 151 evaluated questionnaires) (Table 1). Another opinion poll was directed at tourists (147 of 186 questionnaires evaluated). The questionnaires were handed out to 63 tourists while they were hiking in the park (ad hoc sample). One hundred and twenty-three tourists completed a questionnaire, which was disbursed in one of the park’s visitor’s centres (self-selective sample). In addition, semi-structured expert interviews were held with eight politicians and nature conservation representatives.

Great emphasis was given to forming good and permanent contacts with the local people throughout the entire research period. In accordance with the transdisciplinary approach, every year the obtained results were presented and discussed with them as well as with politicians in various events. The results of these meetings were immediately integrated into the research process.

4. Results and discussion

4.1. Ecological effects

The influence of land use abandonment on the diversity of vegetation types and landscape structures varies depending on the scale of observation. Spatial and temporal changes are conditioned by the type of historical land use, the specific date of its abandonment, natural site factors (e.g. altitude, exposition, soil conditions, microclimate), and recent anthropogenic and zoogenic influences. Even though the evaluation of the results is still underway, the following results reflect our current insights.

Species level (10 m × 10 m): the results from the transect analysis demonstrate a decrease in floristic diversity from lower (grassland, dwarf-shrub-rich grassland, releve-points 1 and 2) to higher successional stages (shrubland, from releve-point 3 onwards) (Table 2). On Alpe Lagarasc, for example, the species number in the broom bush thickets of the more distant areas is only 50% of what it is in the still open grassland area near the huts. Recurring wildfires have encouraged the establishment of relatively species poor vegetation structures, such as formed by heather (*Calluna vulgaris*), bracken (*Pteridium aquilinum*) or broom (*Sarothamnus scoparius*). Furthermore, grazing by semi-feral goats and browsing by game of young trees, such as ash (*Fraxinus excelsior*), white-beam (*Sorbus aria*), bird-cherry (*Prunus avium*) and beech (*Fagus sylvatica*), are hindering succession towards later successional stages. On some sites, certain areas are even reverting to earlier stages of succession. Small landslides have repeatedly broken up the homogeneous vegetation structures, causing erosion in areas that are later colonised by various pioneer species (e.g. *Rumex scutatus*, *Calamagrostis villosa/arundinacea*, *Salix* sp.).

Biotope level (1000 m × 1000 m): on a larger scale, we can observe both an increase and a decrease in the landscape’s structural diversity depending upon its previous use. Structural diversity is decreasing in the areas around the valley villages, which once formed intricate mosaics of small plots under various forms of cultivation. For instance, according to the Rabbini land register of 1867, the category “meadow”, depicted in Table 3, included 13 different types of meadows

Table 2

Decrease in the number of plant species on Alpe Lagarasc along three transects starting in abandoned meadows and ending in bracken–broom shrubland

	1 ^a						2 ^a				3 ^a				
	1 ^b	2 ^b	3 ^b	4 ^b	5 ^b	6 ^b	1 ^b	2 ^b	3 ^b	4 ^b	1 ^b	2 ^b	3 ^b	4 ^b	5 ^b
Cover (%)															
Shrub layer		30	80	70	80	95		30	80	70		30	50	80	50
Herbaceous layer	90	70	40	40	40	20	90	70	40	40	90	70	50	40	50
Height (m)															
Shrub layer	0.0	1.0	1.5	0.6	2.0	2.5	0.0	1.0	2.0	2.0	0.0	1.0	1.0	0.8	0.6
Herbaceous layer	0.2	0.3	0.3	0.2	0.4	0.2	0.2	0.4	0.3	0.4	0.2	0.3	0.4	0.3	0.3
Number of plant species	42	32	21	19	15	10	42	32	17	21	42	34	23	14	14

^a Transect.

^b Releve-point.

Table 3

Types of meadows around Colloro according to the Rabbini land register of 1867 (Burkart, 1999)

Original land use type	English equivalent
Prato	Meadow
Prato ripido	Steep meadow
Prato con viti	Meadow with vine pergolas
Prato con viti ai alberi	Meadow with living trees used as pillars for grapevines
Prato con castagni	Meadow with chestnut trees
Prato irriguo	Irrigated meadow
Prato ripido irriguo	Irrigated meadow on steep slopes
Prato con alberi fruttiferi	Meadow with fruit trees
Prato con noci	Meadow with walnut trees
Prato con gelsi	Meadow with mulberry trees
Prato boschivo	Wooded meadow
Prato con boschi cedui forte	Meadow with hardwood coppices
Prato con pioppi	Meadow with poplars

or uses of meadows, the categories “field” (7) and “forest” (17).

Today this intricate mosaic of different agro-silvo-pastoral land uses has largely disappeared. A representative sample plot (Fig. 2, focus area “Colloro”) showed that the area under forms of land uses, such as meadows, pastures, fields, vineyards and orchards, had been reduced from 59% in 1867 to 5% (meadows + mosaic of structures) by 1999 (Fig. 3). The current category “mosaic of structures” in Fig. 4 consists of many small plots, such as little pastures, vineyards and orchards mixed together with abandoned, formerly cultivated terraces that are now in various stages of succession.

In contrast to the areas around the valley villages, there is an increase in the number of vegetation structures in the alpine areas historically used as meadows and pastures (Fig. 4). In 1954, meadows and pastures

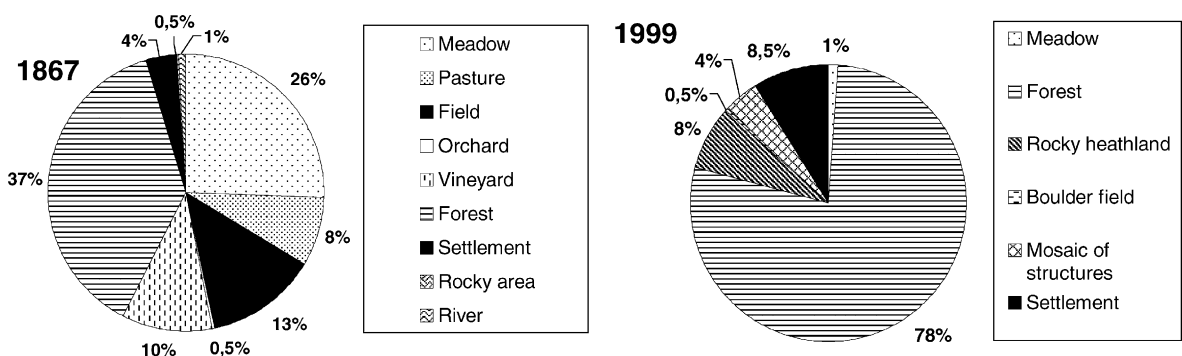


Fig. 3. Land use in the focus area “Colloro” (Fig. 2) in the years 1867 and 1999 (Burkart, 1999).

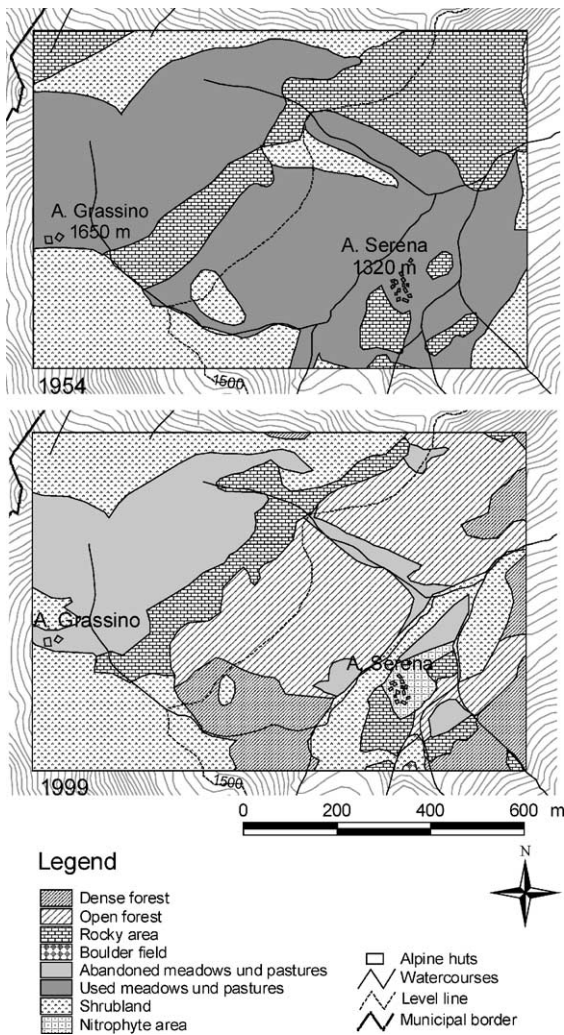


Fig. 4. Land use/vegetation structures on Alpe Serena in the years 1954 and 1999.

on Alpe Serena made up 56% of the area. The rest of the territory was composed of shrubland and rocky areas. By 1999, after 30 years of abandonment, the area was characterised by an increase in vegetation structures that had resulted through succession. For example, today half of the area is covered by different types of open and closed forests (49%) that formerly had not been present.

Landscape level (5000 m × 5000 m): Viewed on a macroscale, the landscape is currently characterised by high ecosystem dynamics, which are manifested in processes directly associated with land use abandon-

ment, such as the succession on formerly cultivated lands and wildfires in the successional communities.

At the moment, the forested area is increasing throughout the municipal territory. Many open areas, such as meadows, pastures and vineyards, are converting to predominately bush-covered areas. The sharp borders that had existed between differently cultivated areas are dissolving.

During prolonged dry periods, which occur frequently in the months of January and February, the shrublands around the villages are extremely susceptible to fire. When a fire does occur, the strong foehn winds ensure its rapid spread. In 1991, when the most recent fires swept through shrublands in the region, damage to the village of Colloro was only prevented through great effort. The very dynamic spread of vegetation and its progressive impenetrability form the basis for the following perceptions of the local people and the visitors.

4.2. Social effects

Free nature development and associated changes in the landscape have effects both on the local inhabitants as well as on visitors to the national park.

The main effects on the inhabitants are psychological or economic in nature. Anxieties concerning threats posed to villages are widespread. In Colloro, for example, the inhabitants are concerned that bush-fires may spread to their village. In response to a questionnaire in which the residents were asked about their desire for the future development of Premosello Chiovenda and its mountains, only 6% of the locals surveyed from Colloro wanted “more forests and dense shrublands”. And one young inhabitant said “the inhabitants of Colloro should mow their meadows at least once a year, in order to prevent bush-fires that pose a great threat to the community”.

The villages and the surrounding landscape were increasingly being viewed as unattractive as a result of land use abandonment and succession. In fact, Colloro was described by a third of those questioned between 31 and 60 years old as being scruffy, dirty or forgotten. Many villagers felt wronged by politicians and are very unhappy about this situation. The decreasing usability and accessibility of the landscape leads to a loss of historical experience, cultural knowledge and local identity; in short, the land is increasingly losing

In the Val Grande National Park many meadows and pastures have been abandoned. For the most part they have either been invaded by shrubs or have already succeeded to forests. What do you think about this development? (N = 174)

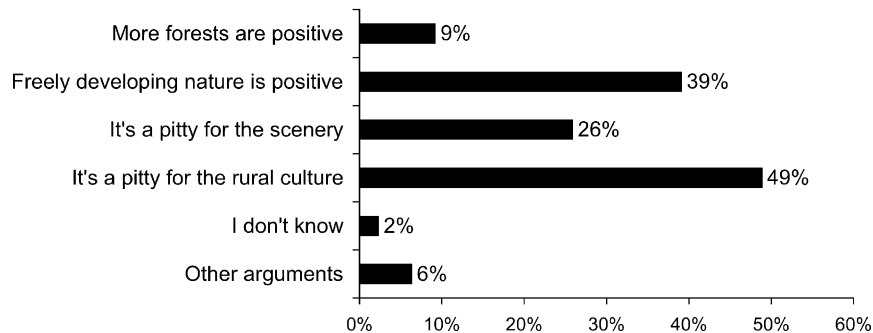


Fig. 5. Visitors' attitudes towards land abandonment and succession (Reeg, 2001).

its value as a "homeland". In an open-ended question about the character of the park's "wilderness", three inhabitants expressed that the freely developing landscape was completely incompatible with their perception of "homeland".

An economic disadvantage of the progressing succession is the diminishing usability of the land. For example, the fresh shoots and flowers as well as the bark of the very competitive broom are a favoured food of the last remaining goat herds. But this plant species contains toxic alkaloids and glycosides, which are harmful to the goats' health (Wiesner et al., 1967) and give the goats' milk an extremely bitter taste. As a consequence of this, the milk is no longer suitable for the preparation of cheese. In light of these facts, the local population is considering giving up goat-herding.

Visitors to the area had mixed feelings about the consequences of land abandonment. Though they judged the resulting landscape's wildness positively, they regretted the cultural losses suffered by rural communities (Fig. 5) (Hunziker, 2000).

Some tourists enjoyed the dynamically developing landscape but desired more touristic infrastructure (e.g. accommodation facilities, hiking trails, information points), while other tourists believed that creation of more infrastructure would take away from the park's character. And so, land use abandonment had both desirable and undesirable aspects for them (Table 4).

In Fig. 6, the extent of the deterioration of the network of pathways and the connected decline in the landscape's accessibility are demonstrated. The total length of streets and pathways in the mountainous territory of Premosello Chiovenda decreased from 100 km in 1935 to 42 km in 1999. Many pathways have disappeared altogether or can no longer be used. As a result, the possibility to experience nature and to use the landscape has decreased severely.

If the process of land use abandonment continues, a loss of rural landscape and its associated habitats will result. Despite this loss, new habitats, such as those resulting from natural ecosystem dynamics, would form.

Table 4

Positive and negative aspects of free nature development for visitors

Positive aspects	Negative aspects
Experiencing nature in a freely developing landscape	Declining accessibility and viability of paths usable by visitors
Increasing value as a space for recreation and meditation	Decreasing possibility to experience nature
Educational value of a freely developing landscape	Decreasing panoramic view
Increasing attractiveness of the landscape	Decreasing attractiveness of the landscape

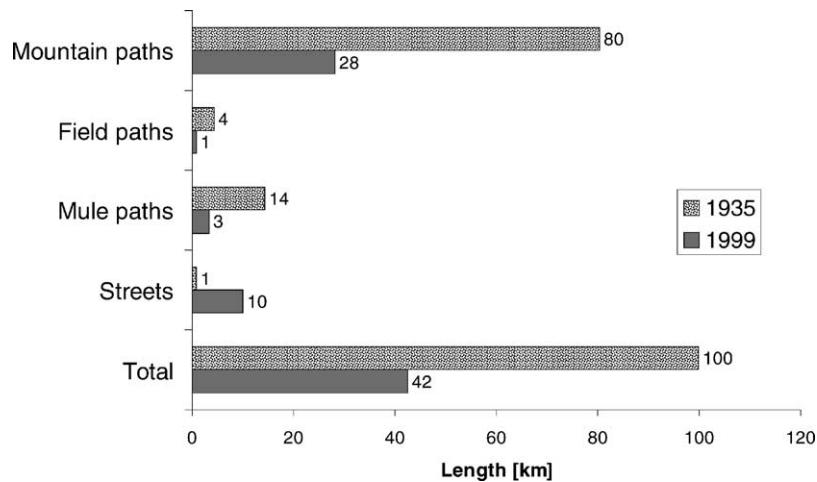


Fig. 6. Length of viable pathways in the mountainous area of Premosello Chiovena in the years 1935 and 1999.

The evolving landscape would not, however, be hospitable as a living space for humans. The characteristics intrinsic to the landscape in the absence of its productive use and maintenance would render it uninhabitable. As a result of increasing inaccessibility, tourism would not be able to play a decisive role in the development of affected communities, and environmental education and recreation—two of the primary management tasks of a national park—would hardly be possible.

4.3. The wilderness area's two faces: culture and nature

Despite the described effects of abandonment, many rural and cultural landscape characteristics persist. Past uses may have significant consequences for future landscape development. In fact, traditional landscape elements still cover 55% of the study area. Only the remaining 45% is without any recognisable traditional landscape elements, as found on very steep slopes, rocky areas, and on formerly cultivated areas on which succession is so far advanced that past use is no longer discernible.

One example of the long-lasting impact that past practices have had on landscape development can be found in the vicinity of Alpe Serena, which in 1969 became the last of Premosello's high Alps to be abandoned. For more than 30 years since its abandon-

ment, Alpe Serena has developed without human impact. Today the areas around the huts are dominated by nitrophytes, such as stinging nettle (*Urtica dioica*), alpine dock (*Rumex alpinus*), willow herb (*Epilobium angustifolium*) and couch grass (*Agropyron caninum*). These plants covered at least 30% of the sampled plots in this area (Wolf, 1999). Moreover, the average carbon/nitrogen ratio of soil samples taken at 10 m intervals along a 100 m transect in these areas was 12. These results clearly demonstrate a high nitrogen content and availability, which resulted from the periodic deposition of dung and the watering that had occurred on these meadows over many years (Wolf, 1999). Presumably, as a result of this persisting nitrogen source, this area will continue to develop differently than had it never been influenced by human land use.

Many of the interviewed locals (49%) and visitors (56%) as well as the park administration associated the Val Grande National Park with "wilderness" and consider it to be "natural" and "virgin". These false perceptions of untouched landscapes have saturated people's thoughts throughout many parts of the world. Existing views about ecosystems in Latin America attest to just how flawed perceptions can be. Though ecosystems have irrefutably been impacted by the indigenous peoples there for centuries (Peters, 2000; Roosevelt, 2000), they have been and continue to be considered by many as being "untouched", as retaining those elements of naturalness or ecosystem integrity

that might have existed in the absence of human disturbance.

Similarly, alpine landscapes have been impacted by humans for a long time. Therefore, the establishment of alpine wilderness areas in landscapes which, according to the US Wilderness Act of 1964, should be “affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable”, is misleading. Nevertheless, the demand for freely developing landscapes is important. Vast landscapes with little human influence are a rare find in the often-fragmented European landscape, and many people appreciate their existence (62% of the polled park visitors came to experience “untouched nature”). But if we are to consider the central meaning of wilderness and value the history of Europe’s cultural landscapes, then these areas should not be called and designated as “wilderness areas”.

4.4. Perspectives for Premosello Chiovenda

A reasonable future scenario for the community would be one in which “dynamic, wild areas” coexist with areas of cultural importance on the basis of the existing park-zone concept. In order to achieve this, existing traditional forms of land use and new, innovative forms should be encouraged and developed. Sixty-two percent of the questioned local population would favour such a development, and 72% of the interviewed visitors would buy local products even if they were more expensive than products of another origin. Politicians and nature conservation representatives have also clearly expressed their desire for such a solution and have pointed out possible means for financing local agriculture. The completely uninhabited territory in the inner Val Grande valley system could act as a reference area, free from agricultural or silvicultural uses. It could serve to study ecosystem processes and communicate the value of a freely developing landscape. A diversified concept of land use planning that combines ecologically friendly types of tourism with agro-silvo-pastoral land uses and publicly financed landscape care could be the starting point for future development in the park’s peripheral zone D. By so doing, a great deal could be achieved, such as the creation of inspirational and recreational facilities, environmental education and communication of cultural values, support of the local economy

and conservation of a people’s “homeland”, as well as preservation and creation of valuable habitats through different agro-silvo-pastoral land uses on the one hand and unhindered natural processes on the other.

5. Conclusions

A growing number of researchers and politicians support dynamic ecosystem processes and the formation of wild areas in the Alps. But most of the potential alpine wilderness areas have a long land use history and in most cases are still inhabited by humans. Decision-makers should be aware of the positive and negative aspects of a large-scale rewilding, and all stakeholders, especially affected local communities, should be included in any decision making process concerning the designation of protected areas in which nature is left to develop without human control. Finally, decisions should always be based on concrete data obtained from local field-inventories.

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