

**Expert Workshop on Forest Landscape restoration
In the Mediterranean Region**

**SUMMACOP:
Restoring European Coppice Forest Landscape**

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Introduction

The coppice system is one of the leading management methods (woodland management) for non-coniferous forests and it differs from high forest management in how the forest is regenerated following harvesting.

The **coppice** forest is regenerated mainly through asexual reproduction, thus exploiting the capacity of certain forest species to generate sprouts (suckers) at the base of the stump once it is cut.

While, in the **high forest** (or seedling forest), regeneration takes place mainly by sexual reproduction or, in other words, it takes place through new plants that sprout from seeds.

The coppice forests are generally characterized by:

- Younger plants than in high forests, in order to maintain a high **sprouting ability** in the stumps. The coppice is cut every 15-30 years, while in high forests the cycles can exceed 100-120 years;
- Timber production is limited to firewood, fencing and chips;
- Less **biomass** is present in the ecosystems, due - above all - to the younger age of the trees.

We refer to the *simple coppice system* when clear-cutting is performed without leaving any subjects (standards) inside the cut area, whereas the term *coppice with standards* is used to refer to the practice of preserving a variable number of trees of one or more species.

The standards that are generated can be isolated and distributed at regular distances from each other or they can be found in groups (PIUSSI, 1994). In the first case, we refer to *uniform standards*, while in the second we refer to *coppicing with groups of standards*.

Like any other type of forestry intervention, coppicing presents both positive and negative aspects, such as limiting the production to a single product; uniformity of the forestry intervention; simplification of specific diversity; limited attraction for tourism; dramatic visual impact; frequent impact of this utilisation on the environment and on soil protection. The effect of the interventions depends on the type of management system or on the way the system is effectively applied. Many of the limitations caused by coppicing depend mainly on the fact that, in order to take advantage of the easy execution and control that it offers, the management system generally ends up being applied in an aprioristic manner to vast areas and/or entire woodland parcels. The lack of site-adaptation of the specific coppice management system occurs despite the fact that full use of the environmental, economic or social potential requires targeted forestry interventions. What seems to emerge here is thus not the need to exclude coppicing, but to adopt it for the right reasons, applying the system to the actual environmental and socio-economic situations on the smallest scale possible, and integrating it – if and when necessary – with other forestry interventions that will make it possible to moderate its limitations and enhance the innate potential of forest resources.

The SUMMACOP project

SU.M.MA.COP. (Sustainable and Multifunctional Management of COPpices) is a demonstration project lead by the Region of Umbria (Central Italy), within the framework of activities supported by the EU Life-environment financial instrument (Appendix 2 presents a list of the partners involved in the project).

The project promotes alternative coppicing systems (coppices represent about 30% of the forests in Europe, more than 40% in the forests in Mediterranean EU countries and about 85% of forests in Umbria) in order to implement the key principles of the current forestry policy: sustainability, multiple functionality and flexibility.

Currently, coppicing is applied through homogenous treatments in large areas and in even-aged stands, maximising production and bound by the requirement to maintain a minimum level of hydro-geological protection.

In Italy, the prevalence of legal restrictions and prohibitive obligations have created a unique rapport between the public institutions that regulate this sector and the forest owners, leading to a situation where there is greater focus on control of the owners than on mutual collaboration. This situation has led to the centralisation of management functions. The responsibilities have in practice moved to the administrative organisation.

Consistent with the current economic well-being of woodland owners and of society in general this development should be reversed: management interventions should optimise the supply of public services and commercial activities, supporting the reduction of management and conservation costs or covering them completely, if possible.

In order to restore the multiple functions of forests, SUMMACOP proposes the implementation of diversified and flexible interventions for coppice improvement that can offset the costs and revenues between actions that are more markedly commercial in scope and those that are more closely linked to land improvement. Through careful technical and economic diversification of the sample areas (coppicing with groups of standards, conversion to high forest, aging, etc.) and with intervention areas available that are large and diverse enough, it will be possible to implement no-cost interventions that will improve the productivity and stability of the vegetation and thus the value of the land.

The specific objectives of the project can be summarised as follows:

- to identify logical paths to follow in order to choose, on a case-by-case basis, the forestry interventions that are best suited for the specific territorial setting;
- to integrate the current forms of coppice treatment with techniques that will make it possible to invest in the woodlands in terms of differentiation and thus in reducing ecological and economic risks;
- to verify the replicability of the procedures and techniques that are adopted, also outside the demonstration areas;
- to broadly communicate the experience and the final results that have been achieved, in order to stimulate widespread dissemination of the procedures developed as part of the project.

The innovative aspect of the project lies in the implementation of demonstration interventions for the purpose of integrating the forestry techniques and management procedures that are currently applied, in order to acknowledge and valorise the innate potential of each coppice forest as a forest rather than a management system.

The project tends to confirm that the principles, which are applied in the management of seedling forests in Alpine environments and in Central Europe, are also relevant in coppice systems. However, the treatment must be tailored to the needs of each corner of the forest, as was also indicated in the very first theories set forth on naturalistic forestry (GAYER, 1886).

The project has selected four demonstration areas (see Appendix 1 for details) with a total area of approximately 180 hectares.

Even though the areas are located in different territorial contexts, they present comparable forestry characteristics: coppices that have reached or gone beyond the age of traditional use (25-30 years of age), with a prevalence of turkish oaks and downy oaks.

The structure and shape of these forests come from a repetitive management scheme, based on cycles that consider only the productive aspects. This scheme, still widespread because of its ease of application, cannot exploit all the full potential of coppice forests.

In each area, multidisciplinary surveys have been carried out aiming at highlighting the multifunctional features and the relationship between present and expected benefits.

On the basis of the above analyses and assessments, decisions were made regarding the interventions to be implemented. These interventions would integrate and alternate different forms of treatment of coppices with other silvicultural interventions (conversion to high forest, natural evolution) in order to deploy the techniques that are best suited to the conditions of the environment and the forest itself. This approach is presently not much used in coppice systems.

Various interventions have been carried out: coppicing on limited surface areas with or without release of groups of standards, thinning located around plants of valuable woody species and thinning for the conversion to high forest.

The whole set of interventions that have been implemented was inspired by the principles of sustainability, multiple functions and flexibility, and it provides an opportunity to differentiate the structure of the forest in a selective way. The interventions applied also aim at the optimisation of expected benefits, the reduction of ecological risks and the creation of conditions for a diversification of economic risks.

Based on what was studied and observed in the demonstration areas, both before and after the silvicultural interventions, the main results can be summarised as follows:

- With the diversification of treatments, production of firewood is rather the same as in traditional coppicing systems;
- In the cutting areas the impact on forest phytocenosis is strong, but with respect to the hypothesis of traditional production management, the approach proposed reduces the extensive effects;
- The SUMMACOP approach has created the foundations for greater environmental variability, increasing the layers of vegetation with regard to underbrush and thus also the niches available for bird life in general and for passerines in particular. The monitoring of fauna has demonstrated an overall improvement in the environmental quality of the areas that were studied, based on the biodiversity value with regard to macro- and meso-theriofauna;
- The flexibility of the approach can reduce the negative impact on the landscape of coppicing with a preliminary analysis of the spatial disposition of cutting areas and group of standards;
- By reducing the number of years between silvicultural interventions the presence of valuable wood species could be significantly improved.

Possibility of replicating the approach

To verify the possibility for replicating the SUMMACOP approach in other geographical areas, an observer group was established. The group was composed of technical experts who deal with coppice management in other regions and in other settings. At the end of the project the observers identified many advantages of the new approach and some disadvantages.

The advantages of the silvicultural techniques adopted promoted the following positive effects:

- a. improvement of the sprout and of the development of the **coppice**, without competition from the standards;
- b. since the **standards** are concentrated in **groups**, they benefit from mutual protection and – particularly if the groups are broad enough – they will be more stable, and have better bearing as well as potential value as lumber;
- c. light conditions that are more favourable for seed regeneration of oaks have been created;
- d. it is possible to conserve and valorise **sporadic plant species**, important above all on an ecological level;
- e. **diversity** is increased, also in terms of **age and structure** (vertical and horizontal); edge situations increase and thus also ecotones and habitats favourable for many plant and animal species;
- f. **there is enhanced diversity** also in terms of **landscape**, preventing the break-up of cover over broad surface areas;
- g. **the landscape is safeguarded** in the medium term, with the conservation of significant plant groups and paths that allow appreciation of the landscape, maintaining the place's cultural value and identity over time;
- h. greater possibility of adapting to variations in morphology and gradient, thus enhancing the forest's potential to **protect the territory** (soil protection and water retention) and making coppicing – in small openings – compatible also for surface areas with protective uses;
- i. greater **approval of the economic potential of the stands** with the production not only of firewood in considerable quantities per unit of surface area, but also of valuable wood species;
- j. **facilitated felling and set-up operations**, since the work is done in small clear-cutting operations (with less risk of damaging the standards), and the roughest areas (impluvia, rocky outcroppings, etc.) are not involved in use;
- k. the combination of coppicing and conversion cutting permits **greater job continuity** for forest workers;
- l. incentives for training and specialisation among **forestry companies**;
- m. more job opportunities for **technical personnel** in planning and overseeing the work;
- n. greater **flexibility** of the system, adapting the management criteria to the numerous needs of society as a whole.

Otherwise the possible disadvantages can be summarised as follows.

- a. the need for qualified management of works, and any necessary planning, by forestry experts, above all to quantify and localise the release of the “groups of standards”;

- b. the need for adequate training of the forestry companies to organise the felling and hauling operations;
- c. revenues are distributed over time: the mass used with the SUMMACOP approach in a single season can be less if the entire available surface is not cut, and there are additional costs mainly due to the fact that the operation needs to be repeated several times;
- d. the need for mental flexibility, openness to innovation and the acceptance of criticism, the capacity to change approach, silvicultural techniques and regulatory provisions;
- e. the need for careful selection of the groups in the case of coppicing with groups of standards, in order to assess the valuable species and of natural or landscape-environmental features;
- f. difficulty in translating the SUMMACOP approach into regulatory standards, and thus greater difficulties during preliminary and control phases, as well as in managing small fellings or numerous adjacent interventions performed by different operators;
- g. formation of forests that are difficult to fit into current legislations, and are difficult to interpret for their future use;
- h. the need to verify the effects of the approach on vegetative recovery, both asexual and sexual, and on the dynamics of the specific composition of the forest in the medium-to-long term.

In general, the observers feel that the SUMMACOP approach can be proposed for the contexts in which they work. They hope that the approach can be applied, eventually following specific experimentation, to other forest configurations and in different socio-economic contexts in order to adapt the approach to a range of situations.

Some harvesting enterprises were involved in the demonstration activities. Their reaction to the new approach was positive, but they did not understand clearly the necessity to improve the multiple functions of the forests.

In light of these conclusions we decided to create additional demonstration areas to show a range of real situations where technical and operational forestry extension can be provided, encouraging forest owners (both private and public owners) to move towards a more integrated approach in the management of local resources. We are also launching a new project to assess the possibility of applying the Summacop approach to a large area involving the owner and other stakeholders from the outset.

Forest landscape restoration

Regione dell'Umbria agrees with the concept of Forest Landscape restoration that is being promoted by IUCN, WWF International and various other governmental and non-governmental partners. Regione dell' Umbria has approved a Regional Forestry Plan, which will be in effect for the ten-year period of 1998-2007, and which is in good harmony with the concept of Forest Landscape Restoration.

The five guidelines of the Regional Forestry Plan are:

- protection and enhancement of forest resources;
- improved integration of forest products with the demand for wood products;
- valorisation of non-wood products;
- offer of structured tourism-recreational services;
- adaptation of institutional, regulatory, educational and information instruments.

We think that an appropriate approach to the numerous international commitments, the goals of rural development, the objectives of the Regional Forestry Plan and the beneficial variables that society expects from forests must be based on knowledge of:

- the international agreements signed by Italy or the European Union that can directly or indirectly involve forest resources;
- the specific forestry objectives included in the Rural Development Plan, the Regional Forestry Plan and/or any economic development plans implemented on a local scale;
- the specific bio-ecological characteristics of each forest or portion thereof;
- the available infrastructures, machinery and areas of expertise;
- the socio-economic context in which the planning or forestry intervention will be conducted.

Once all this knowledge is available, it will be possible to focus on Sustainable Forest Management, clearly bearing in mind that sustainability, must essentially guarantee the

maintenance and, if possible, the improvement of the ecological, economic and social benefits expected from each forest.

To satisfy this need, it is essential to focus on forests that can be considered multi-functional on the smallest scale possible, in order to avoid opposing ecological, economic and social needs and, instead, work in harmony with them to arrive at solutions that are positive from several different standpoints.

Lastly, considering the rapidly changing intensity and quality of the social requirements that have been manifested toward forests over the past fifty years, it is evident that what is needed is management that can adapt flexibly and as quickly as possible to changing socio-economic conditions, while also remaining within the realm of sustainability.

We must say that the SUMMACOP project concerns only a part of the more complex approach of Forest Landscape Restoration. In this project we focused only on the forest management, but we intend to launch a new project in which the FLR approach could be realised.

Conclusion

The SUMMACOP project was launched to demonstrate that coppice forests are first of all forests and like every forest they have innate multi-functional capacity. The project has further presented different silvicultural treatments that can give more flexibility to the management of coppice forests harmonising ecological, economic and social needs. We don't want to completely change the present management of coppice forests, but are trying to introduce a new approach that can exploit the great diversity of European coppice forests.

The wide interest that the projects have generated in Italy shows that there are real possibilities for developing new coppice systems.

We think that the most significant factor limiting the changes in present management of coppice forests is not related to environmental restrictions nor the productivity of vegetation, nor the lack of an end-market, but rather the limited entrepreneurial capacity of the forest owners, which often receive little incentive (when it is not crushed altogether) by public regulatory action in this sector. As we have tried to demonstrate with the SUMMACOP project, the future of Italian coppice forests appears to depend on this entrepreneurial capacity and on the possibility of bringing in highly qualified professionals to work alongside with the private forest owners.

At the end we can say that the main practical aspects that can limit the replication of the approach can be listed as follow:

- in terms of land tenure, the break-up of properties could be an obstacle;
- the approach has yet to be verified in coppice forests composed mainly of species other than deciduous oaks and belonging to different vegetation zones;
- within protected areas, it is generally preferable/required to implement conversion with felling;
- while technically valid, the approach seems to be easier to apply in the public sector; however, it could gradually be extended to the private sector through information and training activities;
- there is no problem in this application except the one tied to the most widespread type of private ownership, so that it is difficult to envisage coppice management over broad or continuous surfaces. As a result, also a spatially diversified approach could encounter limits in applicability to small surfaces, where discontinuous and sporadic management is practiced.
- currently, formal control of regulations is rather easy and has numerical rules that are universally accepted. In order to be generalised, the innovative approach should thus introduce specific regulations with numerical parameters (minimum/maximum size of the openings, of the groups, etc.) that make it verifiable and do not risk confusing it with ordinary clear-cutting;
- for the purpose of transferability, it must yet be verified if the approach can be translated on a regulatory level, with principles that are clear and easy to apply. This could be done by drawing up a specific utilisation plan that will be subject to testing and approval by the competent authorities.

Annex 1 – The demonstration areas

In observing the role attributed to each demonstration area, the choice of silvicultural interventions was guided by criteria that avoided levelling the structural and specific characteristics of the vegetation, while also relying on asexual propagation as the main regeneration method.

The silvicultural interventions can be categorised as follows.

- **Coppicing with groups of standards**, over areas of different sizes, based on road availability, geo-morphological conditions, and the vegetational and structural features of stands, adopting a technique that is often considered more appropriate than traditional sapling, but that is rarely applied in Italy.
- **Conversion to high forest**, in coppice forests at a particularly advanced stage of evolution in which selection is already underway among the stumps. Conversion to high forest should also be favoured in areas where the tourism-recreational function is important (near marked trails and holiday farms). In terms of application, in the areas examined here, the intervention entails thinning that mainly affects the co-dominant plants but also acts partly on the dominated level.
- **Coppicing on small surfaces**, to minimise the visual impact of this type of use, permit low-key silvicultural interventions at shorter time intervals within a single parcel, thus fostering an investment in terms of structural differentiation over the medium-long term.
- **Suspension of interventions** in areas marked by current or potential erosion, or in the presence of highly deteriorated stands.
- **Prompt thinning** on a selective basis that acts on the direct competitors of hardwood trees with valuable production potential or realised in areas intended for tourism, educational and recreational use, in order to ensure people's safety.

In particular, the silvicultural interventions that are conducted are based on assumptions that can be summarised as follows:

- reduction of the individual intervention areas;
- planning of rotation on small surface areas to permit silvicultural interventions at shorter time intervals;
- limitation of the effects of competition on the asexual regeneration by the individuals released at cutting;
- valorisation of the valuable species present.

The silvicultural interventions were conducted in the districts of Alto Chiascio, Monte Subasio and Monte Peglia

"Alto Chiascio" District

The area is characterised by agricultural zones that alternate with limited-extension forests, mostly located along impluvia and steep slope tracts.

The forest performs a major role for the ecological connectivity of the territory, granting the presence of corridors and ecological niches of great relevance mostly for the faunal component. The most suitable intervention to increase the environmental role of the area is the conversion to high forest.

The implementation of the intervention has thus made it possible to increase the value of the limited production in the local social context.

This area is allocated mostly for environmental and recreational uses.

"Monte Subasio" District

The area is located in a prevailing forest context and the implemented interventions are meant to increase the value of the productive role while preserving the principle of multiple functions. Forms of management of coppices have been implemented in conjunction with other silvicultural options, in order to increase the structural diversification of the forest and maintain the specific diversity.

Particularly, a coppicing cut with groups of standards has been used on different extension surfaces by taking into consideration road availability, geo-morphological conditions, and the vegetational and structural features of stands. Incidentally, this technique has often been

considered more suitable than the traditional regeneration through the use of saplings, but it has rarely been used in Italy.

This area is allocated mostly for production and protective uses.

"Monte Peglia" District

The demonstration area is located within a prevalently forest zone where the tourist-recreational valorisation is currently being carried out through the presence of **holiday-farm** activities.

These characteristics are compatible with forestry production activities. From this viewpoint, the proposed interventions aim at keeping the coppicing system and guaranteeing an economically sustainable production, without compromising the valorisation of the area from a tourist and landscape standpoint.

Different interventions have thus been integrated – from conversion to high forests to coppicing on small surfaces, and coppicing with groups of standards. Some areas are left for natural evolution.

This area is allocated mostly for production, protective and tourist uses.

"Selva di Meana" District

The area is part of the Territorial System of naturalistic and environmental interest known as "Monte Peglia and Selva di Meana". Due to the structural characteristics of the forest, of the difficult access with mechanical vehicles and, at the same time, the area's tourism and recreational potential and its large faunal presence, the decision was made to set up an educational trail. This initiative is meant to show the feasibility of educational activities even in settings that were once strongly modified by human activity, without particularly relevant naturalistic features.

The path that was created aims at capturing the visitor's interest by "reading" the forest and clarifying the aspects that characterise a forest, thus making it possible to understand its past and predict its future.

This area is allocated mostly for environmental, recreational and educational uses.

The path *La Selva racconta* – "The forest tells its tale" – acts as a guide for anyone interested in discovering the woods, a vast area in continuous movement, where nature and civilisation meet. In fact, the coppice represents an area in which biotic and abiotic elements coexist, and they bear evidence of the past and present relationship between man and nature.

The path covers two themes, whose main objectives are, respectively:

- knowledge of the forest ecosystem, providing a guide for recognising the natural elements comprising it and the relationships that connect these elements;
- an examination and understanding of the signs that man has left as part of its relationship with the forest.

The visitor is accompanied on the path by a narrating voice that divides the visit into 33 main steps, enriching the contents with in-depth discussions and trivia, devoted to a younger audience.

The path is approximately 1800 m in length and is accompanied by a narration that is over an hour long.

To diversify the visit based on desires and expectations, and to offer the chance to choose an itinerary freely and have personalised listening time, visitors have an easy-to-use audio-guide at their disposal as an accompanying instrument. This represents an innovative proposal for teaching and educational activities in a natural setting.

Annex 2 - Partners

In addition to the Region of Umbria, the project has also involved other parties as partners. These are institutions with a strong interest in the issues involved in coppice systems and they are distinguished by both scientific expertise (research institutes and universities) as operative expertise (mountain community associations).

The participation of scientific partners has made it possible to analyse the following aspects:

- Faunal aspects: L. Ghetti (Region of Umbria)
- Silvicultural and structural aspects: E. Amorini, G. Fabbio, P. Cantiani (Experimental Institute for Silviculture, Arezzo)
- Aspects related to ecology and regeneration capacity: P. Piussi, G. Giovannini (University of Florence)
- Aspects related to road availability and wood harvesting: G. Hippoliti, F. Piegai, E. Marchi, F. Fabiano (University of Florence)
- Flora - Vegetational and pedological aspects: R. Venanzoni (University of Perugia)

The partners' activities have been aided and integrated by the collaboration offered by outside consultants, which handled the economic/financial and information aspects in particular.

The Umbrian mountain communities that have been involved are:

- Alto Chiascio – Gubbio;
- Monte Subasio – Valtopina;
- Valnerina – Norcia;
- Monte Peglia e Selva di Meana – San Venanzo.

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