Spain

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Facts and Figures

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Definitions

Management system applied to hardwood forests where regeneration is due to sprouting from roots or stumps after clearcutting.

Método de beneficio aplicado a una masa forestal de frondosas que busca la regeneración mediante brotes de cepa o de raíz.

Rubén Laina

Coppice forests - forest composed of trees originating from stump or root resprouts.

"Monte bajo" - Masa arbórea compuesta por pies cuyo origen es un brote de cepa o raíz.

Míriam Piqué

Legal Framework

There is no specific legal frame affecting coppice forest management in Spain. Management practices must follow "general good practices" in terms of proper rotation period (depending on species and objective), silvicultural criteria, as well as the organization and implementation of logging works. Harvesting plans are supervised and approved by the Government Forest Service to ensure that good management practices are included.

Rotation Period

1. 20-30 year rotation coppice of *Quercus ilex*, *Q. faginea* or *Q. pyrenaica*, with 1500-3500 trees/ha density and 10 to 20 m height.

2. 12-16 years *Eucalyptus* plantations, 600 trees/ha, three rotations before planting again.

3. Chestnut forest; several thinnings before clearcutting at 80 years.

Typology

Simple coppice	Most common type for obtaining fuelwood; evergreen oak (*Q. ilex*), deciduous oaks (*Q. faginea, Q.pubescens, Q. pyrenaica, Q. canariensis, Q. petraea, Q. robur*) and other species such as *Betula pendula/pubescens*, *Salix caprea*, *Eucalyptus* spp., *Castanea sativa, Platanus* and *Alnus*
Coppice with standards	*Quercus pyrenaica*
Pollarding	Was often used in the past with species such as beech, deciduous oaks, chestnut, ash, poplar, elm and willow in order to combine grazing with fuelwood or timber production; mostly abandoned nowadays
Short rotation coppice	*Populus*

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Images

Quercus ilex ballota low coppice (Photo: Pau Vericat)

Quercus ilex ilex selection coppice (Photo: Pau Vericat)

Quercus humilis conversion to high forests (Photo: Míriam Piqué)

Quercus faginea abandoned conversion to high forest (Photo: Pau Vericat)

Map

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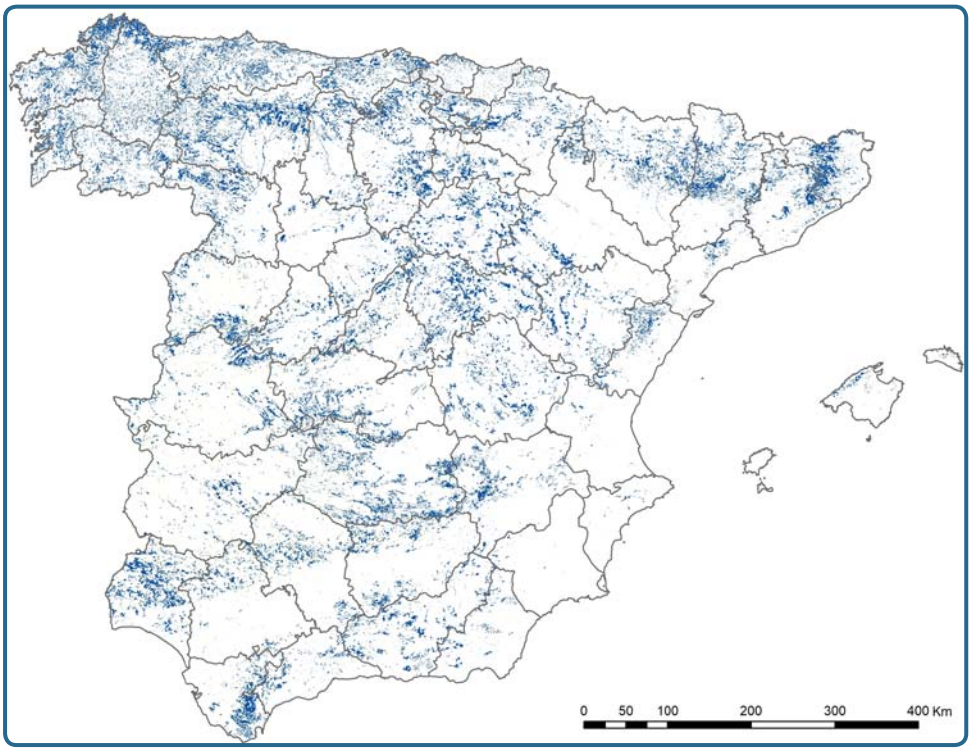

Map of approximate areas of coppice forests in Spain, based on the official Forest Map of Spain (Spanish Ministry of Agriculture and Fisheries, Food and the Environment)

Description

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Coppicing has been widely applied for centuries in Spain to almost all hardwood species with re-sprouting ability. Several coppice methods and rotations have been used in order to obtain a wide range of products, depending on the species. Coppice was the most usual management method to obtain fuelwood, charcoal and tannins, medium sized saw wood (e.g. staves, poles, stakes) or rods for basketry. Pollarding was also applied to some species in order to combine grazing with fuelwood production and to obtain fodder from the branches.

The rotation length used for coppices in Spain varies widely depending on geographic areas, dominant species, type of coppice, site quality and desired characteristics of the products. The most common rotation is around 30 years (from 20 to 40), but shorter rotations were not unusual, especially for pollards.

Coppice forests in Spain cover around 4 million ha, which constitutes around 50% of the total area covered by spontaneous hardwood, and more than 20% of the total forest area. The most important species are *Quercus*, mainly *Q. ilex* (Figure 1) and *Q. pyrenaica*. Since 1950, coppice forest management has been gradually abandoned all across Spain and, at present, only particular species and regions still maintain a significant use of coppices (e.g. *Q. ilex* in the North East, *Q. pyrenaica* in the North West and *Castanea sativa* in the North of Spain).

As a result of this general abandonment, all current coppices have exceeded the usual age of rotation, most of them doubling that age. The excessive density of these abandoned coppices, combined with much of the photosynthetically derived energy being used to maintain the significant underground biomass, has caused a reduction in growth and loss of vitality.

The main emerging risks are related to global change. In this context, abandoned coppices are very vulnerable to water stress and forest fires, both great threats to Mediterranean forests. In addition, low seed production and reduced gene flow can compromise their ability to adapt to new scenarios. Furthermore, the dense and homogeneous stands resulting from abandonment become simpler in terms of structure and specific composition and so tend to be unfavourable from the viewpoint of biodiversity.

Finally, some specific types of coppice, such as pollarding of beech or ash, are very interesting from their historical, social and environmental values, and are at risk of disappearing.

Therefore, in general, the priority is to renew the management of the large area of abandoned coppice in order to ensure the provision of economic, environmental and social services. For this, it will be necessary to reintroduce the traditional management, enhancing this when necessary, or using other silvicultural approaches such as conversion, where it is economically, environmentally, and socially sustainable. Integrating fire prevention and improved habitat conditions is an imperative in all cases.

Figure 1. *Quercus ilex* and *Quercus suber* uneven-aged coppice with standards in Catalonia, Spain.

A major challenge is to improve the profitability of management and exploitation. The current scenario of increased demand for biomass as an energy source is favourable in this respect. Finally, social awareness is also needed to facilitate the acceptance of coppice management, which involves clear felling in many cases.

Major areas of research on Mediterranean coppices in Spain are:

- Silviculture: developing, assessing and transferring new management alternatives in order to achieve a true multi-functional management;
- Improving harvesting techniques;
- Ecology and dynamics of Mediterranean coppice forests;
- Eco-physiology of coppiced species and the relationship of this to silvicultural practices and ecological conditions (carbon balance, stump lifespan, re-sprouting ability in relation with age/size of regrowth);
- Seedling regeneration and genetics of coppice systems, in order to understand the effects and the long term sustainability of the coppice system.

Forestry Regulations

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The forest legal framework in Spain is characterized by the division of competencies between the Central State and the Autonomous Communities. General regulations are made by the Spanish Ministry in charge of forests, while the 17 Communities develop specific regulations adapted to their own characteristics. Furthermore, Communities are responsible for environmental issues in a broad sense and the State is only responsible for basic regulation, coordination and support.

Despite this division, the Spanish forest policy is usually introduced as a wide common framework subscribed to by all the public bodies of the forest sector, as a group. In this sense, the Spanish Forest Programme comprises legal regulations, forest planning tools and some general sustainable forest management tools. The main elements are the Spanish Forest Act (created in 2003; revised twice in 2006 and 2015), the Forest Act of each Community (where it exists), the Spanish Forest Plan (2002) and some of the Forest Plans of each Community.

The aim of the Forest Acts is to ensure the sustainability and conservation of forests. They establish a system of administrative guardianship concerning forest management, both in private and public ownership. The Spanish Forest Act makes the preparation of Forest Management Plans compulsory in certain cases for protective forests (private) and public utility forests. In all cases, the different administrations are in charge of enhancing and promoting forest planning. However, the Regional Forest Acts can extend the obligation to have a management plan to other cases, such as public forests larger than a certain area (depending on the region). The supervision of forest management actions is done through the management plans, or specified administrative procedures where plans are absent.

Regarding coppice forest management, there is no specific regulation; it is usually regulated as any other type of forest management. Nevertheless, the coppice system is described through different guidelines developed for certain species that are mainly managed as coppice (*Quercus ilex, Q. pyrenaica Q. pubescens, Q. faginea, Castanea sativa, Fagus sylvatica, Eucalyptus spp.* among others); hence, coppice management is allowed as a valid system for certain species. Some other regulations can affect coppice, especially those in relation to clear-cuts. In many regions, these clear-cuts are limited by areal extent and require a special administrative procedure.

As the regulation and descriptions of best practice for coppice forests in Spain are linked to certain species, the Autonomous Community has the direct responsibility for administering forest management. We describe below the case for two representative regions in Spain with managed coppice forests: Catalunya and Galicia. There are major differences between their species, ownership characteristics and forest management systems, as Catalunya is situated in the Mediterranean basin, while Galicia is situated in the very humid NW of Spain.

Catalunya

The Catalan Forest Act was published in 1988 and revised several times, while the Catalan Forest Plan was approved in 2014. These two elements form the main reference for the Catalan forest sector and they treat coppice as any other management system. Since 2011, some planning tools are available in order to ensure a common technical basis for forest management, known as the Sustainable Forest Management Guidelines for Catalunya (ORGEST). These include coppice management guidelines and provide silvicultural information for different coppice forests. Silvicultural models describe the treatments and management actions to achieve different objectives based on environmental conditions, always applying sustainable principles. Guidelines referring to resprouting species are focused on the coppice system, mainly oaks and chestnut. In Catalonia, forest practices related to plantations of short rotation broadleaved species are very uncommon.

Galicia

The Galician Forest Act, published in 2012, makes no direct reference to coppice management or to coppice species. Nonetheless, every domestic hardwood species, including those that are commonly coppiced (oak, holm oak, deciduous oak, beech and chestnut) are mentioned in an Annex and declared as priorities when planting in public forests. Forest owners applying for felling licenses for these species have to wait longer than *Eucalyptus* or softwood plantations' owners to get a specific licence prior to harvesting. In the stands composed of domestic hardwood species, planting with *Eucalyptus* is banned, even after harvesting or a wildfire.

Galician forest administrators must check and list every domestic hardwood stand greater than 15 ha, the owners of which are then obliged to have an approved management plan prior to harvesting. In order to write these management plans, the administrators may sign temporary agreements with the owners.

The Galician Forest Plan was approved in 1992, but is presently under revision. In 2014, the Galician forest administration created forest management guidelines and a code of best practice for Galician forests, again focused on the dominant species. Guidelines aimed at resprouting species focus on the coppice system. Plantations of broadleaved species are very common in Galicia, particularly of *Eucalyptus* or birch.

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