

# COMMONS: PAST AND PRESENT IN MEDITERRANEAN SOCIETIES: PROPERTY RIGHTS AND MODES OF USE

**Keywords:** Common woodlands, Property Rights, Modes of Use, Spain.

## I. Geographical/Climatic Characterisation.

The study area is the District of Baza, in which the municipalities of Zújar and Cúllar are situated (see *Appendix 1: Map*). It lies to the north of the province of Granada and covers the whole of the Guadiana Menor river basin. It is a fairly high plain with an altitude of around 1000m on the outer parts and about 900m in its central part (Baza, Huescar). Located between the mountain ranges of Sierra Nevada and Sierra de Baza (to the south and southeast) made up of a string of cold depressions with continental climate. It is in with post-orogenic sediments.

The mountainous areas in the north of the province of Granada are relatively cold and arid -in these depressions the annual rainfall is no more than 350 mm-. This climate defines a precipitation regime of rainy winters (35/40 % of the total annual rainfall) and similar levels in autumn and spring (25/30%) with a totally dry summer. The ecosystem is dominated by aridity and a soil structure which limit the growth possibilities of both the population and the agricultural system (calcic and eutric regosols and cambisols, which are generally poorly evolved soils with low organic content. Nowadays, these climatic and lithological factors have generated a geographical structure of vegetation which we can sum up as follows:

1. Basophilic Betic Supramediterranean series of *Quercus Faginea (Daphno Latifoliae Acereto granatensis sigmetum)*, which is disappearing due to the introduction of *Pinus Nigra subsp. clusiana*, and occupies a stretch of soils rich in organic matter which extends between 1000 and 1400m (*Quercus Rotundifolia* and *Berberido Hispaniae-Querceto rotundifoliae sigmetum*).

2. From this superior stage *Quercus Rotundifolia* begins to evolve as dominant, but in a degraded state, and typical high scrub predominate (spike lavender=*lavandula latifolia* or "*piorno fino*" = *echniospartum boissieri*) or in its most degraded state, esparto (*stipa tenacissima*), rosemary (*rosmarinus officinalis*) or thyme (*thymus orespdamus*) as a previous step to the maximum degree of degradation (basophilic meso-mediterranean series (600-1000 m), area influenced by a continental-cold climate in which only the bushy species mentioned above are capable of spreading freely.

## II. Historical Definition of Property Rights.

From the mid 18th century, the socio-economic functions of the public woodlands in rural communities in south-eastern Spain began to change. They had played a key role in the subsistence of rural communities, by providing for their energy and food needs -firewood, grazing, production of manure, poaching, collection of other materials- (González de Molina, 1993; Cazzola, 1996). The Liberal Agrarian Reform involved greater commercialisation of the land and of natural resources through the extension of private

property rights, arguing the economic and productive inefficiency of communal ownership for society as a whole (Robledo, 1993) in a European trend to defend the "modern" concept of property, productive efficiency and the construction of a capitalist class (Caffiero, 1992; Corona, 1995).

In this context, the action of state forestry policy arose (Cobo, et al 1992; Sala López, 1997) which, from the end of the 19th century potentiated a productive approach to the public woodlands, which was one of the factors that limited the reproduction possibilities of the peasant communities. Forestry offences show the confrontation between activities related to the values use, in order to obtain social reproduction and activities which were progressively subordinated to the logic of the market exchange -auctions of forestry products, dependence of the peasant economies on salaries as a result of paid labour for harvesting, etc.- (Toledo,1993). In turn, this confrontation is defined by the different modes of use of the woodlands.

### **III. Socioeconomic Function of Public Woodlands in Mediterranean Societies.**

The state forestry policy in Spain (since “Ordenanza de Montes de Marina, 1746”, “Ordenanzas Generales de Montes de 1833”, “Ley de Montes de 1863” or “Ley de Repoblacion forestal de 1877”) led to a progressive subjection of the management of woodlands to internal market needs. This greater state and municipal interventionism in system of forestry exploitation involved an extensioin of market dynamic in the context of the liberal agrarian reform in Spain (Garrabou and Sanz Fernandez,1985; Gonzalez de Molina, (1993).

This legislatlative system involved both potentiating commercial management of woodlands and progressively restricting peasant uses , i.e. production and consumption needs of the rural communities.This system of commercial exploitation of woodlands was only possible in the communities in Spain once th public wwodlands were defined and delimited, being this one element in the construction and consolidation of municipal districts since 1860<sup>1</sup>. Only once th municipalities –including common woodlands- were delimited could the commerical exploitation of public woodlands be developed. It was controlled by local council in mediterranean woodlands in mediterranean wwodlands of scarce silvicultural character and cominated by bushy speceies (“esparto”, grazing, aromatic plants).

However, the imposition of this homogenizing legislation in forestry systems led to a confrontation between two modes of resources use (Guha and Gadgil, 1993, Toledo, 1999a): an industrial/commercial mode and a peasant mode of use of common land. The socioeconomic fuction of common land/involving a multiple use of the ecosystem through agricultural/forestry/grazing exploitation of woodlands- was dismantled by the action of commercial forestry policy, generating differing responses in each community.

I can sum up these responses as follows:

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<sup>1</sup> The process of delimiting the public woodlands was already mentioned in “Ordenanzas Generales de Montes de 1833 (Titulo II, Art. 24)” although this system was based on R.D. 1/4/1846:R.O. 12/5/1857: 11/12/1857. Only with “Ley de Montes de 24/5/1863 (art. 20/39)” were these delimitations of public woodlands begun, in a process supervised by the local councils and civil governors. Those who modified these delmitations were penalised with a criminal sanction according to “R.D. 8/5/1884 para la Reforma Penal de las Ordenanzas de Montes” (this was the penal complement to the woodland regulations).

1. Spreading croplands in public woodlands (“agriculturisation”) by large property owners, a process only possible after deforestation (as occurred in Cullar as from 1770). This option enabled the introduction of large herds and increased the extensive croplands of cereals.
2. Commercial exploitation of common land from the mid 19<sup>th</sup> century<sup>2</sup>, which led to the reduction of peasant uses. The implantation of this forestry option subject to the demands of the national and international market (in the case of Zujar, this was oriented towards the extraction of esparto as a basic raw material for the paper and packaging industry).

In the mid 19<sup>th</sup> century, in order to intensify the commercial exploitation, it was necessary to catalogue and quantify the Spanish woodlands<sup>3</sup>. Although this data is of little validity, it was supported by the attitude of municipalities, who saw a way of financing the local government treasury through this system (from 1877, 20% of the products obtained in auctions of forestry products were handed over to the state to finance forestry repopulation or to improve the public woodlands<sup>4</sup>).

The communities of Zujar and Cullar responded differently to the state/municipal interventionism in the management and exploitation of common woodlands. One potentiated the agricultural option (Cullar) and the other the forestry option (Zujar), but in both cases the traditional uses of public woodlands were privatised: changing property rights by ploughing up or restricting the peasant use by introducing public auctions for the sale of esparto to regional or national merchants<sup>5</sup>.

A conflict thus arose as a result of the commercialisation (=silviculture) of public woodlands, together with an expansion of the agricultural area to meet market demand. This led to an end to the practice of multiuse of woodlands and generated a new cycle of environmental destruction in the ecosystems. This was of particular significance in “fragile Mediterranean ecosystems”, but the main objective was searching for a supposedly productive efficiency in these ecosystems (McNeill, 1992; Corona 1995; Halstead, 1998).

So the “Tragedy of Commons” (Feeny, 1990; Lynck, 1999) can thus be seen in the context of changing property rights and a historical evolution of the modes of use of woodlands in rural economies with regeneration difficulties due to interventionist and commercial practices of state forestry policy. The productive option chosen by each community depended of the confluence of various factors peculiar to each: increase of population, satisfaction for demand of energy (firewood, charcoal), soil characteristics of the area which limited or favoured the spreading of agricultural area.

Community of Zujar, taking into account the demand for products in relation to the strategy of consumption and the scarce viability of cultivating its woodlands due to soil

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<sup>2</sup> The system of commercial exploitation of woodlands through public auction was consolidated in “Ley de Montes 24 de Mayo de 1963”, which in its chapter VII sets out the conditions and time periods for these auctions. It was complemented by “Instrucción para Formación de Planes Provisionales de Aprovechamiento según art. 86 del Reglamento de Ejecución de Ley de Montes de 24 de Mayo de 1863”. Which defined the “forestry year” and the types of exploitation.

<sup>3</sup> “Clasificaciones Generales de Montes de 1859, 1862, 1901 y 1931”. These are the general inventories of forest lands in Spain during the last two centuries.

<sup>4</sup> “Ley 11 de Julio 1877 de Disposiciones sobre Repoblación, Fomento y Mejora de Montes Públicos”

<sup>5</sup> The international market for esparto has been studied in Sánchez Picon, A. (1992): *La Integración de la Economía Almeriense en el Mercado Mundial (1778-1936)*. *Cambios Económicos y Negocios de Exportación*. Almería. Instituto de Estudios Almerienses.

characteristics existing there, opted for commercialisation of its woodlands products. On the other hand, Community of Cullar opted for agriculture instead of woodlands. This was encouraged by a group of large property owners anxious to extend their control over any land suitable for agricultural exploitation from the mid 18<sup>th</sup> century.

### III.1. Agrarian System and Forest Management.

Dating from 1770, a high level of the deforestation<sup>6</sup> and cultivation process of public woodlands took place. Mainly carried out by large property owners with a view to extending grazing land for their herds and, at a larger stage, to increase cereal croplands to meet the demands of a higher population. It is evident that the imposition of this agrarian system in the areas containing public woodlands led to the limitations of possibilities for providing energy supplies to the community (introduction of grazing or crops inevitably meant limiting the collection of wood, charcoal). A conflict thus arose between modes or resources use in woodlands: peasant uses (i.e. collection of wood) became an “offence” and illegal, but it wasn’t “offence” the agricultural uses of woodlands that led to the destruction of the tree cover of commons<sup>7</sup> –ploughing up, introduction of herds of livestock, forest fires, etc.-.

In the last third of 18<sup>th</sup> century, we can sum up three modes of resources use in the southeastern peninsular in Spain:

- a) Agricultural Mode of Use, argued by the large property owners of the region as a means of increasing productivity of woodlands with “scarce economic viability”, especially in a community with increased level of population supported by the extent of offences of deforestation and invasion of herds.
- b) Industrial Mode of Use, postulated by Naval Department in these woodlands under its authority since 1746 (“Ordenanza de Montes de Marina”). It aimed to maintain the levels of wood production in these areas, limiting human presence there (by penalising collection of wood).
- c) Peasant Mode of use defined an integrated and multiple use of public woodlands, related to energy and food needs (wood, grazing, charcoal, poaching, sale of wood), which were extracted from in woodlands from a community with very unequal agrarian property structure.

The agricultural mode of use meant that large property owners were focussed on privately acquiring public woodlands<sup>8</sup> by moving the boundary mark which delimited

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<sup>6</sup> In the last two centuries, we can distinguish two types of causes of deforestation. In first, there were causes linked to “agrarian and forestry system”: overgrazing, energetic needs-consumption of firewood, commercial and selective extraction of wood. But there were another kind or “hidden causes” that were provoked by the meaning and dimension of power politic structure (local or state level) and the market of goods (Rowe, R. et al, 1992)

<sup>7</sup> The only significant obstacle that this process of massive destruction of woodlands came up against was the formal cataloguing and quantification of the woodlands (distribution and number of species in each area of common woodlands) developed by the “Departamento de Marina” in 1804 to assess the possibilities of producing wood destined for the domestic market and the construction of boats. **Noticias del Estado Actual del Arbolado que tiene la Subdelegación de Montes de la Villa de Cullar, 1804.** A.H.M.C. Un/numbered File.

<sup>8</sup> Between 1780 and 1830, The Galera and Burrueco Masegosa families were repeatedly reported by the woodlands wardens (over 50 complaints exist) for forest fires or invasion of common lands with their flocks. They tried to take over the use of woodlands and, by extension, become the owners of common land by incorporating it into their

them (“mojones”) to increase the extent of their private property. After this, they initiated a process of deforestation (by cutting down trees and invading the land with their flocks). At a later stage, they extended cereal crops in these areas ploughed common land. If they could prove the land had been cultivated for an uninterrupted period of time, they could then consolidate private ownership rights over this land<sup>9</sup>.

This process of extending the cultivated areas is evidenced in *Table 1*. By the sharp increase in unirrigated cultivated land (almost exclusive cereals) in the period 1750-1870, and with a certain reduction in “uncultivated land” –essentially public woodlands.-. On the other hand, the option forestry of Zujar –gathering esparto, public grazing- meant that the structure of the cultivation systems remained stable. The area of recognized woodlands increasing during the period under consideration (due to the process of “Delimitacion del Municipio de Zujar en 1877” which facilitated a better knowledge of total area of woodlands).

From 1850, these processes of ploughing up and appropriating woodlands by large property owners were intensified, in order to circumvent the cataloguing and delimitation of public woodlands which was being initiated at that time, and which could evidence the illegality of later appropriations of forest land (vid. *Table 2*).

But these were not the only factors which led to the ploughing up the common land in the mid 19<sup>th</sup> century. The beginning of the process of selling public lands (1855) was a factor which directly affected the pre-emptive action of these large property owners. This project was aimed at disposing of a considerable amount of the country’s public woodlands -which previously were in the hands of public institutions, nobles or church- at public auction. The only exception were those woodlands with a proven silvicultural character or which were essential in the subsistence level of rural communities (common land). The incidence of the expropriation of these church and other lands in Cullar was small, both because of their relative silvicultural nature there (dominated by *Quercus* and *Pines*) and because the woodlands area had been reduced by ploughing up carried out by the large property owners since the end of the 18<sup>th</sup> century. Indeed, ironically, these owners -supported in the control that exercised by local council during the 19<sup>th</sup> century- defended the socioeconomic importance of public woodlands for the community and, for this reason, these woodlands were not disposed of at public woodland.

The privatisation process of common lands was incompatible with the commercial system of exploiting the woodlands (esparto, grazing, wood) from the end of the 19<sup>th</sup> century. At this moment, private property rights over public woodlands were being consolidated through judicial proceedings<sup>10</sup>, in which court decisions certified the legality

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“Cortijos” (large farms) (Cortijo D. Pedro, Colorado and Bermeja were their names). A.H.D.P.G. Seccion Montes, 434-449.

<sup>9</sup> The consolidations of private property rights over common land, obtained through ploughing up and usurping the woodlands, was facilitated by the fact that by proving occupation and use of this land for a period of more than 30 years. After this, the proceedings could be initiated to claim private ownership. “Ordenanza General de Montes, R.D. 22/12/1833, Titulo II, Seccion I, art. 24.”

<sup>10</sup> “Sentencia de la Audiencia Civil de Granada 8/6/1878” in A.H.D.P.G., Seccion Montes, 447, 9.

of these ploughings up, arguing the possession of these woodlands since the mid 17<sup>th</sup> century<sup>11</sup>.

The final result meant the consolidation of a historic process of transferring forestry land to private property and agricultural production to the detriment of common usage.

### **III.2. Comercial Exploitation on Commons in Andalucia, Zujar, 1860/1930.**

As opposed to the case of Cullar, public woodlands in Zujar were submitted to an intense process of commercial exploitation from 1860, centred on the public auction of the esparto produced there<sup>12</sup>. This system of commercial exploitation of the woodlands meant:

- a) limiting the collection of esparto by the peasants for making farm tools or for sale in local or regional markets.
- b) “commercialisation” of the management of the woodlands according to mercantile practices. The use of woodlands was privatised by assigning the control and management to private individuals. In this sense, a direct confrontation arose between peasant and commercial mode of resources use, which caused all sorts of social conflict.
- c) Intensification of extraction of forest products, due to the demands of the national and international market. This meant not only privatised the rights of use of the land, but led to a productive crisis of the woodlands in the long term, underlining the semidesertic character of the ecosystem.

The commercial system involved an ever/increasing extraction of esparto, over and above the legal levels permitted, and a non-compliance by the winning bidders in the auction to hand over a share of the esparto for local villagers’ use. In fact, this is demonstrated by the illegal extraction carried out by the local from 1870 (pilfering and theft of esparto from the woodlands was a mechanism of protest by the local people against public auction system).

This public auction system of esparto (vid. *Table 3*) from the woodlands, which attracted the main national industries related to the production of paper fibre, led to a dependence by the peasant community on seasonal work during the periods in which this product was harvested (and thus peasant economies became “salaried”, Humbert, A. 2000).

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<sup>11</sup> The structure of land ownership in these communities originated from the expulsion of the Moors at the end of the 16<sup>th</sup> century, at which time the Crown distributed their land among groups who repopulated the region and cultivated them, including each property an area of woodland. In the mid 18<sup>th</sup> century, this generated confusion between common land and privately owned land, which was resolved by the inclusion of all woodlands as common land (later public woodlands management by the state). This formed the main argument for the appropriation and ploughing up of the woodlands by Cortijos del Madronal, Bermejo, D. Pedro and Colorado. They were arguing that were private lands originating from royal concession at the end of the 16<sup>th</sup> century. See “Pleito Judicial entre Ayuntamiento de Cullar y Familia Masegosa y Galera” A.H.D.P.G. Sección Montes, 434-449; Sección Fomento, 80-90.

<sup>12</sup> The esparto from the public woodlands of Zujar was auctioned annually, to merchants from throughout the country, who had to offer a predetermined minimum total price for the esparto (reserve price). Although a much higher economic figure was offered to win the auction (highest bid). This auction process was governed by a series of previously fixed economic and administrative conditions, which obliged the merchant to hand over, free of charge, a certain amount of esparto to the local council for use by the local community (Ortega Santos, A. 1995, op.cit.)

In this way, the common land was robbed of its socioeconomic role within the agrarian system and became just one more element in the state forestry policy. Its levels of extraction and harvesting (this became the economic mainstay of the community by providing casual labour and salaries) was being determined according to market interests (a good reason for the conflict between a logic of subsistence and a logic of the profit, Iturra, 1993).

Between 1870 and 1930, the collection of esparto from the common lands of Zujar dropped sharply, both in volume and price. There was an abusive and uncontrolled extraction of this woodlands product for commercial purposes, which impeded the productive regeneration of the woodlands –nor was it possible to maintain the level of forestry exploitation, as the grazing rights over the public woodlands of Zujar had also been auctioned (*Table 3*). It is evident that the effect of the crisis in the world market of esparto (attributed to the greater presence of esparto produced in Algeria, which although of lower quality, has a higher annual production, Jimenez Blanco, 1986; Sanchez Picon, 1992) was a significant fall in market prices and bidding at the auctions, but not put end to this system of managing the woodlands (vid. *Table 4*).

The tight municipal hold over the commercial exploitation of the woodlands involved controlling the labour force and its seasonal nature in the community (which was dependent on the collection of esparto during one part of the year to ensure a minimum number of paid working days). This financed the local treasury through the public auction system (and by controlling the level of taxation in the community, as the increase in income by exploiting the woodlands reduced indirect taxes).

From these circumstances, it can be deduced that the continuity and stability of the public auctions were very important for the municipalities and the local oligarchs who controlled the local councils (“municipalización-oligarquización de la gestión forestal” [Municipalisation-oligarchisation of forestry management], Ortega Santos, 1995).

The fall in esparto prices led to a reduction in the capacity to fund the local councils, which depended on the income from the exploitation of the woodlands to cover their annual budgets. In this sense, one could talk of an intensification of municipal control over the systems of commercial exploitation of the woodlands in the interests of maintaining this income and thus reducing tax pressure on the local community (taxes on consumer goods, land ownership taxes).

The case of Zujar, which had no space for spreading the agricultural area, presents a model on intensification of commercial exploitation of the woodlands. It subordinated the traditional regenerative strategies of the community to a dependence on seasonal work in the collection of esparto (which occurred between February and May). Thus, the system of public auction meant a privatisation of the woodlands, not through the transformation of property rights but simply by privatising the use of woodlands, granting the control of its management to individuals or companies, which in order to carry out his exploitation, limited the multiple use strategy of the peasant groups in the public woodlands.

#### **IV. Mode of Resource Use and Commons.**

##### **IV.1. Historical Transformacion of the modes of use of the public woodlands.**

The main aim of this article is to set out the historical evolution of the socio-economic use of public woodlands in rural communities of the southeastern Spanish peninsula from the mid 18th century. In order to do so, the "mode of resource use" concept (Guha, and Gadgil, 1993; Toledo, 1999 a,b) has been adopted as a methodological tool which, starting with a criticism of the Marxist concept of "Mode of Production", offers an integrated vision of the type of property, allocation and distribution of natural resources in various historical periods, integrating the study of struggle social and political structures, interrelating economic infrastructure and ecological context.

This concept of universal application. This should not obscure the fact that it is an "ideal type". It allows various modes of resource use and the dominant mode in any socio-ecological formation to be pin-pointed.

Peasant Use of the public woodlands became subordinated to the progressive implementation of their commercial management and encouraged by the expansion of capitalist and monetary practices within the rural communities. The woodlands were a source of energy and food for the organic economies of peasant groups. It also led to the commercial mode of use by means of public auctions of forest products from the mid 19th century. It was supported by forestry legislation which implemented a "productive" concept of the woodlands and allowed the illegalisation of the traditional practices of the peasant groups: extension of the land occupied by cereals to the detriment of the woodland areas, reduction in grazing land and conversion of livestock from income-producing to working animals with consequent changes in the levels of organic fertilisation of the agroecosystems.

The natural conditions of production (Leff,1992; Radkau,1993) were disrupted. My study considers "forestry delinquency" as an element of social conflict, but as a response to the reallocation of property rights and use of the natural resources.

The study of forestry delinquency enables the forms of intensity of protest of social groups to the privatisation of the rights of use of the woodlands to be delimited. Different social groups were involved in forestry management at each moment in history. The sources evidence these quantitative and qualitative differences of the actions of the different social groups. Lastly, we shall see also the degree of human impact which each social group has on the ecosystem when trying to implement its forestry management option.

The analysis of the coexistence between two modes of resource use makes it possible to understand how the final supremacy of the commercial use of the woodlands (limiting or suppressing peasant uses) led to a conversion of the botanical structure of the woodlands, encouraging crops oriented towards market demand, which in the case of the district of Baza meant the harvesting of bushy species (esparto, aromatic plants). This commercial management accentuated the xerofitic-semidesert character of the Mediterranean woodlands, which were progressively stripped of arboreal cover.

##### **IV.2. Conflicts on the management of forest resources.**

In this period, a series of factors come together which evidence the dispute over the forest resources: ranging from the energy or food requirements (firewood, charcoal, illegal grazing, poaching) to, in the other extreme, the extension of the agricultural area by large property owners, who carried out an intensive process of deforestation of the woodlands to introduce livestock or extend cereals cultivation.

The agricultural/silvicultural/grazing system of managing the woodlands had allowed peasants to continue their collection activities, but the progressive privatisation of the rights of use in this system originated the distributive conflicts for the multiple use of the woodlands. The local oligarchies exercised repression over any economic activities (such as collection of firewood, grazing) which did not provide municipal income by way of taxation on production; at the same time, these practices limited the conversion of the woodlands to agricultural production or income-producing livestock.

The rural communities, on the other hand, had developed a mode of resource use of the woodlands which satisfied, as mentioned above, its energy and food needs. A conflict therefore arose between their customary rights -fundamental in the mechanisms of solidarity and mutual help of rural communities (Thompson,1995; Toledo, 1993; Palenzuela Chamorro, 1993)- and the progressive limitation and privatisation of these rights by the local oligarchies. This "illegalisation"of the peasant modes of use generated a reaction by the rural community against the development of what we could be denominated "dynamics of dispossession" (O'Connor, 1994), which attacked the socio-economic bases of the peasant communities (Cobo et al, 1992; González de Molina and Sevilla Guzmán, 1991,1993).

At this point, it seems necessary to pose some questions: Which were the stages of the disarticulation of the peasant mode of use by the imposition of a commercial/industrial mode of use, until the end of the XIX<sup>th</sup> century? Which were the responses? Are similar responses found in the different communities studied? Were forestry options adapted to the limitations of the ecosystem? .

In the case of Zújar, due to the botanical structure of its common woodlands, the only references available are of offences related to the main forestry species, esparto, and illegal grazing. The hegemony of esparto - *stipa tenacissima* – only allowed a residual exploitation of wood: holm oaks, kermes oaks and, to a lesser extent, pines<sup>13</sup>.

The offences related to the collection of esparto reflected the peasant mode of use of the woodlands (elaboration of tools and its sale in the local-regional market). This mode of use being limited in the mid 19th century when a commercial forestry option was implemented. At the same time, public woodlands became a source of income for the council,as income-producing livestock was potentiated -permitting the entrance of flocks

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<sup>13</sup> "...the quality of the terrain of these woodlands ..... around this town adjacent to Baza is land which, where flat, is ploughed, whilst the large area situated on slopes which cannot be ploughed, can only be used for pinewoods for wood or firewood, esparto fields and other fruits for animal fodder ... .. in the part which is adjacent to the town of Cortes, there are pinewoods, a lot of rosemary and kermes oaks and very little ploughed land .... around the Cañada de Aljibe, there are some areas of woodland, kermes oak woods and large dry riverbeds of grazing land and scrub, pinewoods and some ploughed areas..." *Acta de División de Lotes y Escritura Otorgada junto a otros documentos de la Ciudad de Zújar, 1769, A.H.M.Z., Un-numbered File.*

from neighbouring villages<sup>14</sup>-. These livestock were not forming part of the communal grazing association, who were obliged to pay a rent for grazing in the district (*Diagram 1*).

The absence of reports of pilfering of esparto<sup>15</sup> until 1850 shows how the peasant mode of use of the woodlands included this collecting activity as just one more element in the interrelationship between man and forests. That changed with the irruption of the system of commercialisation of this product through public auctions in the last third of the 19th century. These activities were not considered as "offences" and interfered with the commercial mode of use.

Lastly, it is worth pointing out some reflections on the importance of forest fire in rural mediterranean communities. These woodlands were predominated by bushy species (esparto, aromatic plants, etc.). Fire was a regenerative factor in the productive cycles of these bushes<sup>16</sup> and a way of fighting against woodland pests. To regenerate the esparto producing fields, the most effective method was controlled burning, thus reducing the time needed to start producing again from 10 -the normal time taken from sowing- to 3 years<sup>17</sup>.

In 1790-1830 the municipality of Cúllar had a blend of productive options converged in these public woodlands -collection of firewood, grazing, agricultural interests, etc-. We must analyze the incidence of the distributive conflicts around these resources and how the privatisation of the rights of use of the woodlands was implemented -the transformation of the so-called "peasant mod of use" of the woodlands-.

In this period, there were two basic factors which defined the evolution of the number of forestry offences. On the one hand, between 1795 and 1805, the Woodlands and Plantations in the Municipality of Cúllar were measured and catalogued by the Naval Department (due to its silvicultural interest in these woodlands). This limited human influence on the woodlands during this period. And on the other, the fact that the Subdelegation of Woodlands considered the villagers use of the woodlands to be inappropriate<sup>18</sup>.

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<sup>14</sup> Between 1773 and 1785, the Zújar Council accepted the introduction of livestock in exchange for rent, with an annual volume of between 3,700 animals in 1773 and 750 in 1780. These animals belonged to the villagers of Pozo Alcón, -a municipality in the province of Jaén at the north of Granada- and their names were Juan Moreno Zarco, Luis Conde Martínez, Ramón Gómez de Fontanar, Marcos Rodríguez, José Rodríguez Martín Lara and Alfonso Rodríguez. A.H.M.Z. Actas de Cabildo. Unnumbered files.

<sup>15</sup> The data has been taken from the Actas de Cabildo of the Zújar Local Council (A.H.M.Z.) which reliably (to the extent that documentary sources can be reliable) show the incidence of these collecting activities, as the council was the first to receive reports from the woodland rangers.

<sup>16</sup> In this sense, the symbolic value of forest fire in the peasant communities is put into context, originally as a factor of vegetative regeneration of the woodlands until the mid 19th century, and after that time, becoming an element of protest against a homogenous forestry management imposed by the State on the rural communities (Sivaramakrishnan, K. 1996), to the same extent that it was a tool for deforestation and expansion of the agricultural area (Saikku, M. 1996) or of forestry monoculture.

<sup>17</sup> This is reflected in the municipal documentation of the last third of the 18th century (Actas de Cabildo, 17/3/1778; 3/4/1785). These described how the woodlands were burnt by groups of locals to regenerate the esparto fields -and also grazing areas- thus avoiding the extension of woodlands populated by trees. The burning process involved all the villagers in the community.

<sup>18</sup> Investigación de la Subdelegación de Montes y Platos, Comandancia Militar de la Provincia para el Municipio de Cullar, 12 Septiembre 1800. A.H.M.C., sin numerar. Correspondencia Oficial.

After these preliminary considerations, some terminological questions must be asked about the actual content of the offences mentioned here. It appeared to us to be necessary to redefine the content of each type of offence. For this reason, pilfering of wood has been considered as the theft of a quantity of firewood less than 50 kg. per villager, whilst theft of firewood means stealing 50-100 kg. per villager. Thus allowing us to differentiate between offences committed for subsistence needs and those oriented to the sale of firewood in local or regional markets. The concept "deforestation" refers to the massive chopping down of pines and holm oaks, it being impossible to convert this into measures of loads of firewood or to the surface area affected. Although in every case it meant the destruction of extensive wooded areas (*see Diagram 3*). As regards offences relating to livestock, this has been divided into illegal grazing (invasion of the woodlands by an unquantified amount of livestock) and herd grazing (referring to the reports of large herds or massive collection of branches for animal feed).

After these considerations, it could be asked what pattern in the distribution of resources can be found from these offences? Is the subsistence and reproduction policy of the peasant groups or the agricultural policy of the large property owners who were extending the cultivated area to the detriment of the forest area. Who was really behind *the tragedy of the enclosures*? (Martínez Alier, 1992).

It is evident that a first level analysis -percentage of each type of offence with respect to the total number of offences considered- should make it possible to differentiate two productive options of the woodlands within the peasant mode of use. Firstly, to meet the energy needs of the community (e.g. pilfering of firewood) and, secondly, the destruction of tree cover by land owners or their farm managers to extend the agricultural area.

Taking the first factor of analysis, the pilfering of firewood appears as the main offence in the woodlands. This kind of offence does not reveal any type of class segmentation, in the sense that both farm managers and farm labourers, individually or in groups, were convicted. With regard to this offence, the imposition of high fines for pilfering of firewood protagonised by "outsiders" is of note. It was justified on the basis of the supposed concept of the communal municipal "co-operative" of firewood similar to that exercised over the woodland grazing rights. In no case was the activity of grazing exercised by the villagers penalised -in every case it was over-grazing that was punished. It was being defined as the introduction of a higher number of livestock than that permitted<sup>19</sup> - whereas the farmers from outside the locality were prosecuted.

This was only the first indication of the concept of "territoriality" argued by the oligarchical groups in the last third of the 18th century in defense of a right to use the "natural capital" (O'Connor, 1994) of each community. It was not by assigning rights of use to locals, but by excluding this right to communities outside it. This was a previous step to the delimitation of municipal districts carried out from 1840 and the later privatisation of the

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<sup>19</sup> Between 1815 and 1820, a group of villagers was sanctioned (Ginés Azor, Andrés Cañadas and Miguel Sánchez Burrueco) for introducing an excessive number of livestock and, above all, for doing so in woodland areas "of private property" in the area of Matían. The property rights over the woodlands were being litigated; however between 1792 and 1815 there were over 15 reports of multiple villagers offences (though the number and people were not specified) for illegal grazing in these woodlands. A.H.M.C. Causas por Infraccion en Montes.

rights of use over the woodland in the last third of the 19th century. In the period 1809-1827, over 30 cases were recorded of livestock farmers from Oria, Caniles or Galera (nearby villages) for introducing their livestock into the woodlands of Cúllar, fines averaging over 25 reales being imposed per offender. In some of these cases, the same offender was found guilty of pilfering firewood while his flocks were illegally grazing<sup>20</sup>.

It seems apparent that this group of offences were guided by motives of subsistence of the peasant communities, but why was this kind of activity the one which suffered the highest penalties in this period?

I think that the answer to this question lies in the conflictive coexistence of different productive motives in an organic economy and a peasant mode of use of the woodland. In these communities there arose a battle between the interests of peasant subsistence and those of the property owners who aimed to convert the rights of use, and later rights of ownership, over the public woodlands through deforestation and forest fires. They destroy the tree cover and thus potentiate agricultural or simply commercial use (blacksmiths, wheelwrights and carpenters) who chopped down pines or holm oaks for their commercial activities without paying any tax to council for such right or use.

This kind of offence, with high fines, involved a highly significant human impact on the ecosystem. This fact is reflected in the sources which considered that the offence "was breaking up the common woodlands" and transformed the botanical structure of the woodlands. It was potentiated the presence of bushy species as opposed to tree species. However, the most important human impact on the woodlands was the process of tree-felling due to the conscious action of large farmers (through their farm managers) to extend the area of agricultural crops. Cases such as the Cortijo del Malagón (through its farm manager Juan Sánchez Moreno), Cortijo del Madroñal (whose farm manager was Jerónimo Reche Sánchez), Cortijo del Margen (through its owner, son of M<sup>a</sup> Teresa Olarra) were all fined with almost "symbolic" fines (never more than 60 reales)<sup>21</sup> for this kind of offence. It is apparent that between 1809 and 1826, the land owners in the municipality modified the structure and dimension of the public woodlands. But it is difficult to quantify the total area of ploughed up or deforested woodland converted to agriculture or grazing for livestock.

It was not merely a modification of the landscape or the botanical structure, but a long-term potentiation of the bushy mediterranean woodlands -by eliminating the tree cover. Prior to the irruption of the selling off processes of institutional land, the property rights over the woodlands were transformed through private appropriation of their rights of use<sup>22</sup>. They

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<sup>20</sup> Many locals from Orce, such as Antonio Sola, Pedro Regalado, Pedro Mateos or José Reche and Pedro and Antonio González, (locals of Oria) or José Perales (from the village of Caniles) were penalised between 1810 and 1825 both for the introduction of herds into the woodlands and for pilfering firewood. The fines were over 10 reales - the latter being the average fine for offences of firewood pilfering for the locals of Cúllar in this period - A.H.M.C. Causas por Infraccion en Montes, sin numerar.

<sup>21</sup> Only the farm managers from Cortijo del Contador (Juan Gonzalez, 82 reales), from Cortijo Sabueco (Miguel Reche Sola, 104 reales) and from Cortijo Colorado (Antonio Pérez Moya, 100 reales) received fines of over 60 reales. All of them were convicted of provoking forest fires in various areas of public woodland along with the offences of tree-felling. A.H.M.C. Causas por Infraccion en Montes, sin numerar.

<sup>22</sup> These deforestation actions were not concentrated in a particular area but affected a large number of regions of public woodlands: Labor de San Pablo, Cortijo Fajardo, Cortijo Colorado, Cortijo Matían, Cortijo Bermeja, Cortijo Caido, Cortijo

are very good examples of “distributive conflicts” (Martinez Alier, 1995) inside a determined mode of resources use, in this case, peasant mode of use.

As regards forest fires, in Cúllar existed a certain permissiveness towards "woodlands management" with fire as an element of regeneration of grazing and esparto. But a less permissive reaction occurred in the case of fires on "privately-owned" woodlands - areas of woodland annexed to the large farms in the region-, meaning that they had to be conceptualised as "private property". Thus, fires provoked by groups of farm labourers in 1820, which were recorded in the Montes de Asperilla and spread over cultivated land. This fire led to a fine of 1000 reales for the offenders (the highest fine imposed in the whole period studied) and the obligation to work for four months in the woodlands, even though the fires only affected 56 pines in the public woodlands<sup>23</sup>.

On the other hand, the fires started by livestock and agricultural farmers from the Cortijos were never sanctioned, either by fines or other penalties<sup>24</sup>. In 1819, a group of livestock farmers, headed by J. Pedro Martínez de la Torre set fire to the Coto de la Asperilla (common woodlands), burning over 1700 pines to extend the area for the livestock of the Cortijo de Margen, as had already occurred in 1803 when part of the woodlands of the Labor de Santaolla was burnt by Bernardo Carricondo (brother of the farm manager of Cortijo del Margen)<sup>25</sup>.

The confrontation between the two modes of use of the woodlands in the rural communities of the peninsular south-east is apparent. A reproductive mode was determined by peasant uses of the woodlands to meet their energy and food needs as opposed to the productive mode of livestock and agricultural farmers. The level of repression and penal constraints on pilfering of firewood and subsistence livelihood -reproductive activities of peasant groups in common woodlands- were factors which limited the livestock and agricultural options of farm managers and land owners (*Diagram 3*).

The sanction of another type of criminal practice was formulated in a similar way. Grazing activities received the highest average fines of all the offences considered. In the case of invasion by herds, these mainly affected groups of shepherds from neighbouring communities (Oria, Caniles, etc.). The community of Cúllar argued a concept of defence of the rights of use of their woodlands ("territoriality and competitive exclusion", Garrido Peña and González de Molina, 1997) that excluded the other communities.

On another level, illegal grazing -whose fines were established according to the number of animal reported by woodland rangers- was considered as the main destructive

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Nuevo, Cortijo Muñoz, Labor de Videra, Labor de Santaolalla, Cortijo Malagón, Llano del Bautista and Monte de Asperilla.

<sup>23</sup> A.H.M.C. Causas por Infraccion en Montes, n 23, 1820, sin numerar.

<sup>24</sup> Throughout the period considered, only in 1815 were Ginez Azor and a group of shepherds sanctioned (with a fine of 73 reales) for setting fire to the area of Matian to increase grazing land. This was because they were being sanctioned for repeating the fire in a woodland area burnt in 1792 by another group of livestock farmers headed by Antonio García Medina. A.H.M.C. Causas por Infraccion en Montes, sin numerar.

<sup>25</sup> A.H.M.C. Causas por Infraccion en Montes, n 10 y 25, 1803 y 1819, sin numerar.

agent in the forestry ecosystem and sanctioned with greater severity (*Diagram 4*). In contrast, a greater permissiveness can be seen with human actions in the woodlands which led to a disarticulation of their agricultural/silvicultural /grazing character -tree-felling, forest fires with a higher degree of destruction of the ecosystem- and subsequent ploughing up. This offered a wide range of possibilities to the owners of agricultural land to expand, protected by light sanctions from the local and provincial power structures.

#### **IV.2. Peasant and Commercial Modes of Resources Use of the public woodlands.**

Forestry policy in Spain since the mid 19th century ("Ordenanzas Generales de Montes 1833", "Ley de Montes de 1863" and the "Ley de Repoblación Forestal de 1877") led to a progressive subordination of the management systems of the woodlands to market demands. This was implemented by means of public auctions of forestry products that facilitated a greater state and municipal interventionism in the management of the public woodlands. We shall not make a detailed study of this legislation -this not being the appropriate context- but shall only state that the "Ley de Montes de 1863" (Titulo VII) delimited conditions and periods of the contracts exploiting the woodlands, annual timetable of the public auction systems, economic and administrative conditions of forestry exploitation, etc.

All this legislative apparatus implicitly potentiated a commercial management of the woodlands which subordinated peasant mode of use to market strategies and the spreading of the mercantilization in all spheres of production. The system of public auction of woodland products involved both processes: control by the State (which required payment of 20% of the income generated for improving the public woodlands) and by the local authorities (previous "selection" of the highest bidders who were to carry out the commercial exploitation of the woodlands). This meant a tendency for the peasant economies to become salary-based through collection methods which involved a high percentage of the rural community.

This commercial-industrial orientation of woodlands led to a reorientation of the peasant uses, meaning that the analysis of forestry conflict may evidence various central questions:

a) Degree of survival of the peasant mode of use, related to subsistence strategies of the rural communities (Palenzuela Chamorro,1993), progressively subordinated to the imposition of commercial and monetary parameters for managing the woodlands. This led to a transformation of the significance of the public woodlands for the peasant community as a source of salaries.

b) Degree of penetration of industrial uses (governed by a system of public auctions). This was the origin of a conflictive response from the rural communities to state-municipal imposition of a system of using the woodlands to the detriment of traditional rights. For example, the auction of grazing rights over the woodlands led to the prohibition of subsistence grazing.

The analysis of the conflictivity has been carried out in two different ways: in the case of Zújar, the evolution of the total chronological period has been studied (1850-1930),

whilst in the municipality of Cúllar, only the period 1870-1880<sup>26</sup> has been dealt with. Both due to the volume of cases recorded and because this was a time of judicial consolidation of the appropriation of the public woodlands by large farms -reduced the surface area of the woodlands-, thus making it unviable to implement a commercial system for their exploitation.

The possibility of publicly auctioning the esparto increased the volume of municipal income and reduced the tax pressure on land ownership, which fell on the land-owning members of the local authority. In the case of Zújar gave rise to a decided move towards an industrial-commercial mode of use of the public woodlands limiting, prohibiting and sanctioning any collection activity which would interfere with the rights of the industrialists of the sector, bought at public auction<sup>27</sup>.

Thus the pilfering of esparto became a symbolic element (Thompson,1995) of protest against the process of municipal and state control of the management methods of the public woodlands -public auctions and highest bidders of them-. This protest did not merely consist of individual actions against the "new private ownership" of the woodlands, but are described in the sources as massive invasions of farm labourers to collect esparto, defending their right to use the woodlands<sup>28</sup>. In fact, the highest rates of conflictivity coincide with the time the public auction system was implemented (1860-1875) and the sector was commercially reactivated (1915-1925).

Once the forestry option of woodland management was implemented, new types of conflictivity in the municipality of Zújar emerged. These conflicts could be classified as micro-ploughing up of the public woodlands - which already occurred in Cúllar from the end of the 18th century. This should not be interpreted as the transformation of the productive structure of the woodland but rather in the sense that, since 1860, in the light of the process of cataloguing and delimiting the public woodlands and municipal districts, the existence of this kind of private appropriations of woodland was identified<sup>29</sup>. Many of those who benefitted from this process of creating agricultural land from public woodlands were

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<sup>26</sup> For the analysis of the municipality of Cúllar, apart from the municipal sources cited (Actas de Cabildo y Expedientes de Subastas Publicas de Productos Forestales [Council Acts and Records of Public Auction of Forestry Exploitation], A.H.M.C. 55-79), we also consulted the Libro de Registro de Decisiones Gubernativas sobre infracciones generales a la Ley de Montes [Record Book of Governmental Decisions for general infractions against the Woodlands Regulations] A.H.M.C. files 15-16) which are complemented with abundant documentation from the Historical Archives of the Provincial Government of Granada (Seccion Montes [Woodlands Section], 446 and Seccion Obras Publicas [Public Works Section], 80-90).

<sup>27</sup> **"...continued and frequent abuses which are being committed by many farm labourers from the village and from other neighbouring villages through the fraudulent pulling up of esparto which grows in the public woodlands and its sale to certain deposits; this jurisdiction ..... should adopt radical measures to prevent such abuses in accordance with the wishes of public opinion in this neighbourhood..."** A.H.M.Z. Actas de Cabildo, sin numerar, 12-2-1870.

<sup>28</sup> "Ley de Montes de 1863" referred to a respect for local use (art 9) as long as it was compatible with the conservation of tree cover. It was ratified in "Titulo VII de la Reglamentacion para la puesta en vigor de la Ley de Montes de 24 de Mayo de 1863" which in its art.94 specified as exempt from public auction **"... the public woodland products which by virtue of use or rights legitimately recognised by the Administration are considered as belonging to local villagers..."**.

<sup>29</sup> This kind of micro-ploughing up which is difficult to quantify, and above all leaves little trace in the documentary sources, was evidenced by the "Deslindes de Servidumbres Pecuarias" , carried out in the municipality of Zújar in 1862,1872 and 1892. A.H.M.Z.

members of the oligarchies who controlled the local authority (Montoya Heredia family) and who from this position of local power sanctioned and legalised this ploughing up in the period 1900-1925 (see *Diagram 1*).

The appearance of offences of pilfering of esparto in the municipality of Cúllar from 1870 (this offence did not exist in the period 1780-1830) evidences this head-on opposition of the rural community to the privatisation of the use of the woodlands by means of public auctions. Such privatisation led to the peasant economies becoming salaried, and thus dependent on the casual labour supplied by the agricultural activities, as the paid collection activities that existed were not sufficient on their own to meet their needs. If, along with this, we consider offences related to collection activities (12.4%), almost 66% of cases appear to be associated with the so-called "peasant mode of use" of the public woodlands, i.e. consumption needs -activities in the reproductive sphere- that includes offences of disobedience to authority as a means of protest.

Between 1870 and 1880, offences of trespass on private property were described as the irruption of an uncontrolled group of farm labourers, headed by some local leader - whether man or woman<sup>30</sup> - who symbolically collected sown products or esparto. If it was a woodland area, they were reaffirming the slogan "the woodlands belong to us all". Along similar lines of protest were the frequent protests in front of the Town Hall ("disobedience to authority"), which demonstrated the opposition to the usurpations of woodlands made by the large property owners or against the public auction of esparto or grazing rights over the woodlands. This protest action was dissolved by the Woodland Rangers, an element equipped with local power in this type of action.

Between 1830 and 1870, legal action was repeatedly taken against members of the Galera, Bautista<sup>31</sup> and Muñoz families for fires and illegal appropriations -rarely prosecuted and even then barely penalised- of public woodlands<sup>32</sup>. They were sanctioned with low fines but led to a high degree of human impact on the ecosystem, extending the grazing area in the mediterranean woodlands (Leone, V. 1997) due to the low cost of this practice in relation to the investment involved in buying public grazing land. Taking the Galera family as an example, a family group with a strong presence in local power from 1850, members of this family were tried for fires in the Monte de Honcillares, Pago del Malagón and Hoya de

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<sup>30</sup> In many of the cases considered, women led this trespassing on the woodlands -such names as Apolinia Pérez, Isabel Reche or Claudia Sánchez appear in "Libro de Registro de Decisiones Gubernativas sobre infracciones a Ordenanzas de Montes" A.H.M.C.- who, with the support of the farm labourers, played a central role in the community protest, leading to the description of this type of protest as a "bioecological identification between women and nature" (Agarwal, B. 1990, 1994, 1996: Sinha, S. et al, 1997).

<sup>31</sup> Pedro Bautista Reche, owner of the Cortijo de D. Pedro y Videra, was accused of a massive felling of pines in 1849. He argued to be the owner of the trees and the bushy woodlands and therefore had the right to be able to patrol these areas with private guards. This is only one consequence of the fires provoked by members of this family in the Woodlands of la Labor de Muñoz in 1827. Causas Judiciales, Seccion Montes, N 85, A.H.D.P.G. .

<sup>32</sup> La Cañada de Oria, el Cerro de Honcillares and el Pago de Videra were burnt down by a forest fire in 1827 provoked by the livestock farmers Mateo Galera, Andrés Sala Pérez and Antonio Bautista Resina. This fire affected over 4,500 pines and caused petitions from the blacksmiths in the municipality to make use of what was left in the woodlands, whilst the local council auctioned the burnt firewood to increase the Woodlands Funds. Seccion Montes, n 447. A.H.D.P.G.

Juarez. This was a continuation of a process begun in 1829 when these woodlands were burnt by members of these family groups, burning down 5,000 pines in order to provide grazing land for over 2,000 head of livestock<sup>33</sup>.

Thus, both the agricultural use of the public woodlands defended by the large property owners and the peasant pattern of use related to energy and food requirements exemplified what we could call the peasant mode of resources use as opposed to the imposition of a commercial mode of use in the forestry management systems (*Table 5*). This commercial management was dictated by the woodlands leadership and the tax and public ministries<sup>34</sup>. The commercial orientation of the public woodlands was unviable in the case of Cúllar due to the agricultural practices exercised in the woodland area; thus, it was not until 1905 that the first auction of esparto from the public woodlands took place. For example, not until 1910 that the same process occurred with regard to the public grazing rights. These woodlands covered 15,000 has in the mid 19th century but by the beginning of the 20th century only covered 841 has.

## ***V. Conclusions***

From this analysis which offers information on forestry delinquency, the evolution from a peasant mode of resources use (agricultural/silvicultural/grazing) of the woodlands towards the potentiation of an industrial/commercial use can be defined as occurring between the mid 19th century and the end of the 19th century in the rural communities. This conversion of the modes of use led to a change in the reproduction strategies of the peasant groups, due to the imposition of monetary systems of managing the woodlands (in the case of esparto in Zújar) or the promotion of the agricultural use of the woodlands by the large property owners (in the case of Cúllar).

This involved the transformation not only of property rights (from communal to state public property) or of the modes of use (from subsistence to agricultural-forestry or commercial use). In the long term, It was changed the biological structure of the woodlands itself, destroying the tree cover and potentiating the bushy woodlands with higher immediate economic profitability (*see Table 6*).

This process of transformation may be deciphered by analysing the forestry delinquency as an indicator of the changes in the modes of resources use. It is an indicator of the degree of privatisation of access to such forestry resources by the peasant communities. This privatisation occurred not only through the imposition of systems of public auction but as a result of the appropriation of woodlands by large property owners in the different municipalities. This general tendency projects different realities in each community, depending on its particular ecosystem. In the case of Zújar, the dominance of the bushy woodlands facilitated the extraction of esparto and its sale in local or commercial

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<sup>33</sup> A.H.D.P.G. Seccion Montes, n 445-7.

<sup>34</sup> In this regard, due to their importance in opening new roads for reflection in a comparative analysis, the research into colonial forestry policies should be mentioned. This usggest the beginning of a new cycle of environmental destruction with the imposition of homogenising forestry management patterns, and a substitution or subordination of the traditional uses of the rural communities (Mensching,H.G. Sharma,R.C. 1984; Bandhu,D:Garg,R.K. 1986:Swarup,R. Chand,K.P. 1987; Clark,J. ed. 1994; Haebauer,R. 1995; Rajanrajan, M. 1996; Sinha,S. et al 1997; Sivaramakhrisnan,K. 1996)

markets from the mid 19th century, but in Cúllar the area cultivated with cereals was extended to the detriment of forest areas. This latter case reflects not only a confrontation between the peasant and commercial mode of use but is complicated by the introduction of another variable: the agricultural interests of the large property owners, whose agricultural option directly opposed the interests of state tax collection, supported the imposition of an industrial/commercial mode of use in the woodlands.

**Appendix 1. Abbreviations used:**

A.H.M.C.: Municipal Historical Archives of Cúllar.

A.H.M.Z.: Municipal Historical Archives of Zújar.

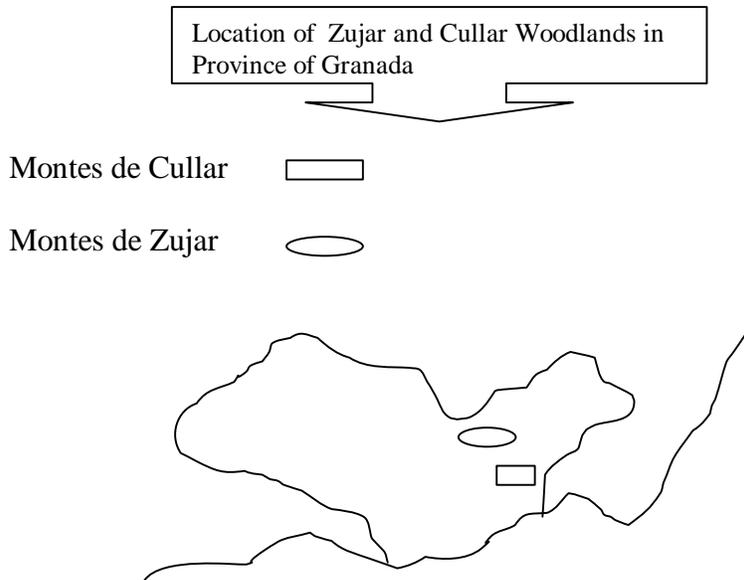
A.H.D.P.G.: Historical Archives of the Provincial Government of Granada

A.H.R.Ch.G.: Historical Archives of the Royal Chancery of Granada.

**APPENDIX II. MAPS, TABLES AND DIAGRAMS.**



*Map 1: Map of Spain, Province of Granada.*



<i>Tabla 1. Percentage of Cultivated Land with respect to total of municipality Cullar and Zujar, 1750-1870</i>				
<b>Municipality</b>	<b>Unirrigated</b>	<b>Irrigated</b>	<b>Uncultivated</b>	<b>Total</b>
1752:				
Cullar	32.31	7.24	60.45	100
Zujar	24.40	8.00	67.60	100
1870:				
Cullar	42.22	0.47	57.31	100
Zujar	24.30	3.09	72.61	100

Source: *Catastro Ensenada, Respuestas Generales* [a kind of land register reflecting ownership and use]. *Amillaramientos Municipales*. A.H.R.CH.G.

<i>Table 2. Ploughing up of Common Woodlands. Cullar, 1850-1872</i>			
<b>Year</b>	<b>Situation</b>	<b>Identity of Farmer</b>	<b>Area</b>
1852	Cortijo Bermejo y Madro;al Montes Matian, Pililla, Bermeja y Santaolalla	Conde de Jiraldeli	151 has. 44 a.
1855		Ramon Galera Galera	403 has. 84 a.
1857	Monte del Llano de Abad	Jose Burrueco	
		Ramon Galera Galera	
		Andres Galera Galera	
1857	Montes de Pililla	Jose Martinez Torres	252 has. 40 a.
		Pedro Bautista Torres	30has.
		Antonio Galera Martinez	160 has. 20 a.
1872	Cortijo D. Pedro Garcia	Pedro Bautista Reche	

Source: *Acciones Judiciales contra particulares* [a kind of legal actions against private individuals]. *Seccion Montes*. A.H.D.P.G., 447, 1-10.

<i>Table 3. Commercial Exploitation of Esparto. Total Volume and Local' s Extraction (1). Zujar and Cullar, 1870-1930</i>			
<b>Time Period</b>	<b>Total Volume Esparto Zujar</b>	<b>Total Volume Esparto Cullar</b>	<b>Local' s Extraction Esparto in Zujar</b>
1870-5	13000	-	2900
1876-80	15000	-	2800
1881-5	20000	-	2100
1886-90	17000	-	2000
1891-5	15000	-	2200
1896-1900	14000	-	2200
1901-5	14500	4000	1700
1906-10	10000	3800	1650
1911-5	14500	3150	1700
1916-20	10000	2400	1500
1921-5	10000	1120	1000
1926-30	700	350	780

(1). N of Qm Thousands per year in average per five-year period  
Source: *Expedientes de Ejecucion Subastas Publicas de Esparto*. A.H.M.Z., A.H.M.C.

<i>Table 4. Forestry Exploitation of Esparto. Reserve Price and Highest Bid (1). Zujar and Cullar, 1870-1940.</i>				
<b>Time Period</b>	<b>Reserve Price of Zujar</b>	<b>Highest Bid Zujar</b>	<b>Reserve Price Cullar</b>	<b>Highest Bid Cullar</b>
1870-5	4500	19800	-	-
1876-80	4500	76180	-	-
1881-5	24000	70000	-	-
1886-90	22000	60000	-	-
1891-5	25000	58000	-	-
1896-1900	24000	55000	-	-
1901-5	21750	21120	-	-
1906-10	19000	30700	6400	2600
1911-5	15000	19300	1960	2150
1916-20	9000	44000	1400	1300
1921-5	43200	33255	599	610
1926-30	15200	23250	422	422
1931-5	16060	16060	431	410
1936-40	16000	18500	371	391

(1) Reserve Price and Highest Bid per year in average per five-year period  
Source: : *Expedientes de Ejecucion Subastas Publicas de Esparto. A.H.M.Z., A.H.M.C.*

<i>Table 5. Percentage Distribution of Socioeconomic Groups with respect to the type of offences committed. Zujar and Cullar, 1870-1880</i>								
<b>Social Origin of delinquent</b>	<b>Type of Offences</b>							
	Invasión of Livestock	Error in Weights	Illegal Grazing	Theft of Esparto	Disobedi. to Authority	Trespass on Private Property	Theft of firewood	Others (*)
Farm Labourer	29.4	-	73.9	93.3	-	100	100	46.1
Farm Manager	23.5	-	8.7	3.3	-	-	-	7.7
Merchant	-	28.6	-	-	-	-	-	38.4
Land Owner	11.8	-	4.3	-	-	-	-	-
Others	29.4	71.4	13.1	3.3	100	-	-	7.7

(\*) Source: *Record Book of Government Decisions for Infractions of Woodlands General Regulantions. A.H.M.C., Legajos 15-16.*  
(\*\*) Others: theft of partridge eggs, collection of snails in woodlands or on private property; sale o meat killed by wolves, etc.

<i>Table 6. Modes of Use and Socioecological Variables in Public Woodlands Region of Baza (Southeastern Andalusia, Spain) 1750-1930</i>			
<b>Variables</b>	<b>Intramodal Conflict</b>	<b>Transitional Stage</b>	<b>Intermodal Conflict</b>
Kind of Property	Communal Use and Property	Municipal/State	State
Subject of Conflict	Peasant Small Merchants	Peasant Local Oligarchies	Local and State Administration
Degree of Use	Subsistence Use: Energy consumption Food consumption	Agricultural Forestry Use ad opposed to taxed use (auctions)	Commercial Use: Needs of Local and State Tax Fund
Botanical Structure	Mediterranean Woods:Pines, Hoolm Oaks, Bushes	Mediterranean Woods:Reduction in Tree Cover and commercial use of bushy species	Forestry Monoculture: Degrades Mediterranean Woodlands.
Source: <i>Own Research</i>			

Evolution of Forestry Delinquency. Woodlands of Zújar, 1770-1930. Nº Cases Per Year

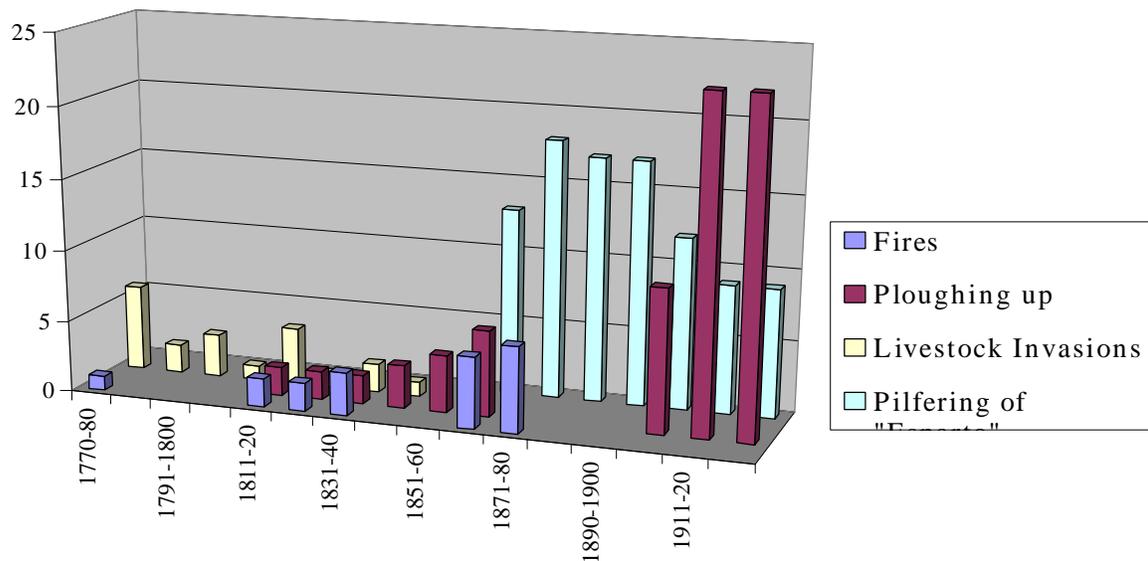


Diagram 1. Evolution of Forestry Delinquency: Fires, Ploughing up, Pilfering and Grazing. Woodlands of Zújar, 1770-1930. Source: Council Acts. A.H.M.Z.

Evolution of Forestry Delinquency. Woodlands of Cúllar 1790-1830.

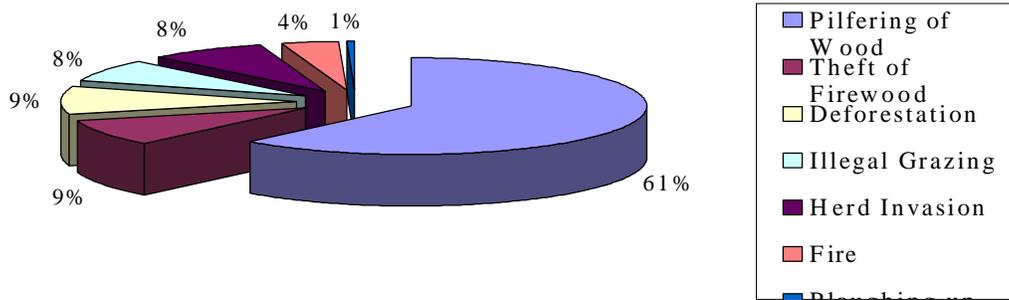


Diagram 2. Evolution of Forestry Delinquency. Woodlands of Cúllar, 1790-1830. Source: Cases of Damage to Woodlands. A.H.M.C.

Evolution of Forestry Delinquency. Theft of Firewood, Average Fines. Woodlands of Cúllar, 1790-1830.

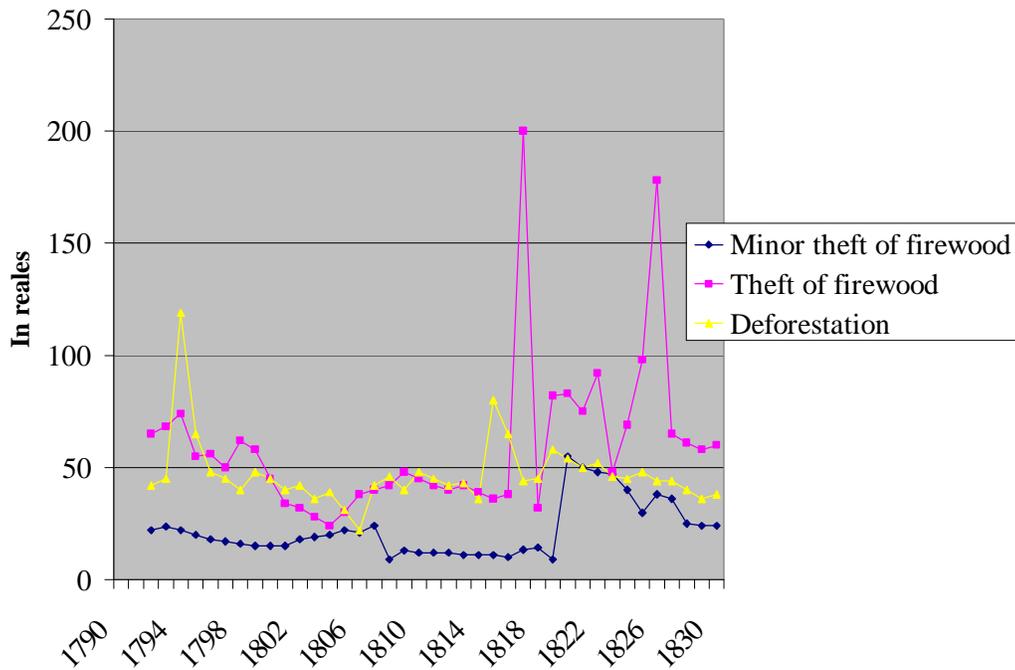


Diagram 3. Evolution of Forestry Delinquency. Theft of Firewood, Average Fines. Woodlands of Cúllar, 1790-1830. Source: Cases of Damage to Woodlands. A.H.M.C.

Evolution of Forestry Delinquency, Grazing and Fires, Average Fines. Woodlands of Cúllar, 1790-1830.

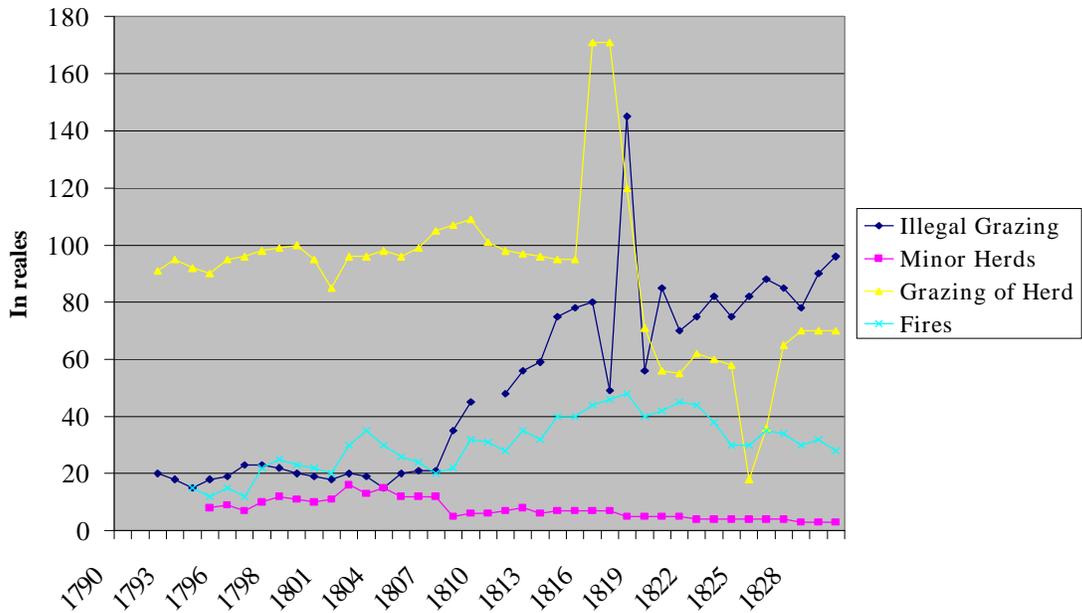


Diagram 4. Evolution of Forestry Delinquency, Grazing and Fires. Average Fines. Woodlands of Cúllar, 1790-1830. **Source: Cases of Damage to Woodlands. A.H.M.C.**

Typology of Forestry Delinquency. Woodlands of Cúllar, 1870-1930.

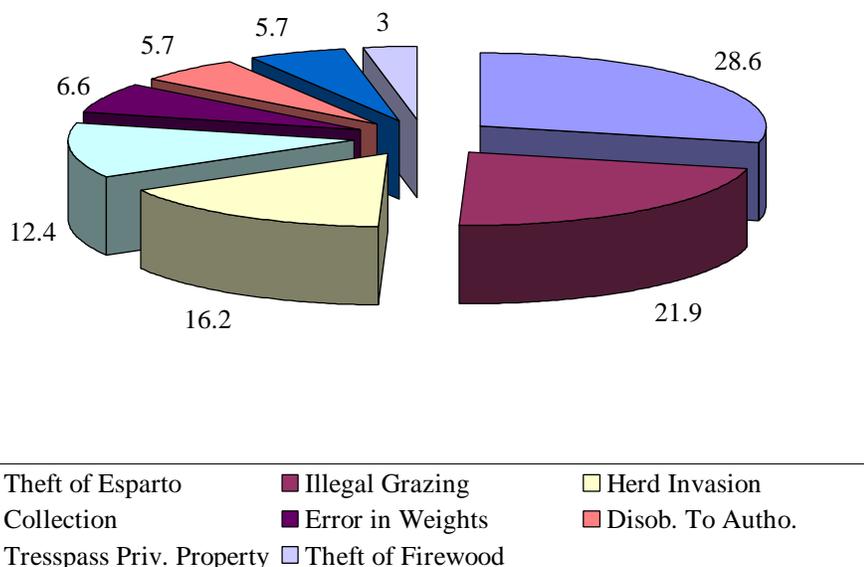


Diagram 5. Typology of Forestry Delinquency. Woodlands of Cúllar, 1870-1930. **Source: Record Book of Government Decisions. A.H.M.C.**

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