

DYNAMICS OF FOREST FIRES IN CASTILLA Y LEÓN (SPAIN)

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I. INTRODUCTION

The Mediterranean world, to which Spain belongs, is increasingly concerned by forest fires. In the Iberian peninsula have been, are and will be for decades a reiterated disaster, that sometimes occurs in isolation, others with a reiteration and striking density and, almost always, at times of year when weather conditions are favourable: mainly during the summer or autumn entry and, secondarily, to the exit of winter and early spring, coinciding with the abundance of dry vegetation, due to aridity summer or winter frost. Combining these circumstances with the abandonment of traditional plowed surface in numerous areas of medium or high mountains has resulted in a vast, growing and accelerated development of scrub, that when over-densification, ends up burning. Thus, forest fires were reported mainly in medium mountainous terrain, with an annual precipitation generally superior to 600 mm and an abandonment of traditional agricultural and livestock activities.

Thus, it is in the northwest of Spain where the largest fires occur and where the use of fire as a cultural tool has become firmly established. In this region are the most incendiary provinces of the Autonomous Community: Zamora and Leon.

The study focuses on the 104 municipalities included in the Plan 42, so called because it is composed by those 104 municipalities of which 42 are the most incendiary of the region, the rest corresponding to those which are next to them. In this small territory of the 104 municipalities, is burned around 48% of the area affected throughout Castile and Leon in the period studied, between 1983 and 2005; circumstance that reveals the «pyrofile» (lover-fire) character of this whole villages in the west of Zamora and Leon, in northern Burgos and in the south-central Avila, which represent less than 5% of the municipalities in the region and 10.5% of the area, but come to burn nearly half the total area stricken. In 2005 they were added another 50 municipalities (11 from Avila and 39 from Salamanca), in which some years too many fires occur.

II. THE ECOLOGICAL ENVIRONMENT AND TRADITIONAL HUMAN OCCUPATION AS FACTORS OF REDUCING RISK AND DAMAGE OF FIRES

The socio-economic and cultural roots of the fires are manifested in its heavy concentration in mountain areas rainy and cool, in its predominantly intentional nature, or in its close relationship with livestock and grazing, in front of minor role of the ecological context, which despite being minor factor, has some incidence.

The climate of Castile and Leon is distinguished by its cold winters, long and moderately or very rainy, compared with the not-too-hot summers, short and dry, showing net aridity between two and just over three months but not exceeding those of June and September. Except for the Atlantic strip, that includes Castilian-Leonese enclaves of Cantabrian range, it is the less propitious climate of Spain to the fire, because of the moderate maximum temperatures, the shortening of the period of highest risk, limited to July-October, and the annual rainfall ranging between 900 and 2,000 mm in the vast mountainous areas, or just under 400 and 800 mm in the plains even more extensive.

However, the correlation between incendiary areas and abundant rainfall is also based on the sprout fast and easy of the scrub in situation of colonising and expanding after the burning fires, so that in little more of a lustrum the bushes recover the bearing, the density and the partial drying of the branches expose that them to a high risk and make difficult the extinction, density and partial drying of the branches that expose them to a high risk and make difficult the extinction. All this increases in price the clearing and limits its effectiveness; in addition, the predominant acidophilus nature of scrubs —heaths, rockroses and brooms— agree enough with those types of higher inflammability and combustibility.

The relief of plains and mountains is distinguished by a relatively weak height difference, thanks to modest dissection of the Duero basin, the least aggressive of the major Spanish rivers. Only the regional margins slopes flowing to the Sil, Cantabrian, Ebro, Tagus or the headwaters of tributaries to the Douro in Portugal -Sanabria and Aliste— show a large accidentation with abrupt drops, to over 2,000 m, steep slopes and deep gorges. These marginal areas contain in their 18,000 km² a remarkable portion of the incendiary counties, like the mentioned ones of Zamora, the Bierzo, Cabrera, Tietar or the Mountains of Burgos, that can accuse frontier factor, because of some them are bordering with Portugal and Galicia, where a good deal of fires are created (425,000 ha burned in Portugal in 2003 or 90,000 in Galicia in 2006, 57,000 in 2005..., according to the Web «incendiosforestales.org»)

The stunted soils, minerals, acids and somewhat damaged by periodical fires, dry quickly and do not specially protect the vegetal organs of roots against the fire, resulting vulnerable to surface run off, particularly on the strong slopes, abundant in the more incendiary counties. However, they seem to be a minor factor, since more than to affect fires, they suffer their effects and there are not major differences with the counties of traditional forest areas of Tierra Pinariega, Guadarrama..., where fires are rare.

The vegetal cover influences flammability, combustibility and progression of fires. The existence of large masses of conifers and leafy trees is not a factor conducive to fires, against

to what happens with abundant thickets of rockrose and brooms, and of ferns and other herbs, which tend to be more the type of vegetation burned, so that the fire-resistant scrub of heaths, rockrose and, to a lesser extent, brooms, as well as herbs and brambles, that invade old plowed fields, encourage risk.

Therefore, ecological conditions do not, by themselves, constitute a risk factor.

III. CHANGES IN LAND USE

There are two factors, however, closely related to the dynamics of fires in Castile and Leon, and both have their origins in the rural crisis in the late 1950, when the bankruptcy of the traditional way of life brought emigration, abandonment and the transformation of the countryside. One is the reduction of cultivated dry land, due to simple abandonment, the other being the processing and encouraging of livestock.

Changes in the agricultural landscape are focused on not only the abandonment of crops, but also other elements associated with arable land: roads, ways, boundaries, fences, terraces, etc..., which, with the non-use, will deteriorate and, above all, will be overrun by vegetation, mainly by the scrub of legumes and rockroses.

The fall of the arable land in all 42 municipalities in the plan, between 1972 and 1999, has been striking, losing 60%, which means the abandonment of well over half of farmland cropped in the mid-twentieth century.

Alike, there was a radical transformation of livestock from the traditional breeds, versatile, especially in the beef, to a select and specialized livestock. The transformation has not been linear, but complex, with the particularity of that these races, more demanding, have not benefited all meadows and pastures, which have been abandoned, as opposed to increased use of compound feed in food.

The number of heads of cattle has remained, although it has been reduced the number of farms, which have grown in size; something similar has happened with the sheep, while the goat has experienced a dramatic fall, with the addition that the goats are animals that «clean» and «open» the «monte», the scrub.

But if the change of ranching uses has favored the invasion of vegetation and the use of fire to stop it, other economic and social factors gain more relevance.

IV. SOCIO-ECONOMIC ASPECTS OF FOREST EXPLOITATION

The management of the forest or bush, the same as that of arable or any other agricultural land, is subject to the inexorable logic of economic benefit. Its operation long ago was due to the utility which took; its abandonment nowadays is due to the loss of that utility's past. The forest or bush remains insofar as they produce economic benefits to their holders. Needless to say, if this does not happen, its esteem falls completely. Hence, in almost all municipalities of Plan 42 there is little appreciation for the forest, and less for the pine forest, which they consider that belongs to the State, compared with deciduous native forest, which they consider theirs.

Therefore, we can deduce that if the benefits of the pine and the forest do not extend to each and every one of the inhabitants of the village in which it is located, will be considered

like a space without value. Hence the idea, widespread among villagers, the futility of current «monte» (scrub and forest), since before the scrub, the rockrose, was used as firewood in the kitchens and ovens of bread while, since it came butane, only serves to soil the ground, with the aggravating circumstance that the population today, diminished in number and ageing, does not feel wanting to clean the bush or the brambles, invading everything.

The owners of forest land feel a growing disinterest by their exploitation, due to the progressive decline in timber prices. The perception that villagers have of the economic benefit is completely opposite to that of Administration and urban dwellers: the forest, and especially the pine forest, does not produce a penny, or at least it does not reach to them. They, if anything, perceive the pines as a disorder, as a problem, as an expropriation of land-use previously used and which now only get obstacles, bans and fines.

In addition, to little valuation of wood unites the fact that the forest has always been considered a secondary use or complementary to that of livestock, whereas today the Administration impose a logging that they do not look like theirs, which favours disinterest in the forest; only hunting and gathering mushrooms is providing them a source of income visible and verifiable, which requires taking care of the forest and reduce forest fires.

V. DYNAMICS OF FIRES IN CASTILLA Y LEON

The number of fires and hectares burned remain year after year at very high levels, although both conjuncturally can be reduced if wet years occur or if the scrub has little development since it has been burned in previous years. When the number of fires or the area burned is reduced, there is a tendency to think, wrongly, that is solving the problem of forest fires, which want to be corrected through the application of technical equipments and specialized personnel, such as helicopters, trucks and groups of extinction, but that is not enough to counter a phenomenon that is repeated almost inexorably.

It should be clear that the total area burned in 42 municipalities in the plan regarding the total of Castile and Leon is around half. In the lapse of the 23 years it represented a 48.9%, corresponding to these municipalities almost 500,000 has of a total of almost a million burned, as shown on maps (Figures 18 and 19 of the article in Castilian)

The analysis of the reports of fire allows us to see the enormous proportion of intentional ones, which, along with those of «unknown causes», «burning of pastures and agricultural burning,» reach 91% of the causes of fires in Aliste and the Carballeda, 84% in La Culebra and 96% in Sanabria, in the western of province of Zamora. Among them, the proportion of those of unknown causes only affects between 11 and 15%, with some exceptions that reaches 25%, due more to the desire not to investigate or indict anyone than to a real ignorance of the underlying cause. In this regard, the widely held view among the inhabitants of these lands is that over 99% of fires are intentional, it is curious to see that in times of the year in which there are dried crops in the fields there are no fires.

In this sense it is also striking the idea, widespread among people of these municipalities, that the chestnuts are theirs, because they are fast and annual benefit, while the pines are of the State, not theirs, because they do not give benefits rather than long-term and indirect, with the particularity that those theoretical benefits do not reach them; hence, accordingly just the value, they do not feel that burn beyond the inconvenience or personal injury that

may cause the burning of a pine forest. However, there is an increased appreciation of pine forest due mainly to the recovery of fungi, which are increasingly collected by villagers and sold to companies engaged in marketing or preserved these products.

VI. CONCLUSION

We can not forget that the key to the incendiary dynamics resides in the minds of local people, who sometimes perceived fires as a problem and others as a mere cultural phenomenon, depending on what burn, because they consider like a problem the burning fire of tree masses, but not the bush, mulch or pastures, that he sees even with satisfaction.

If most of the fires were deliberately provoked by the inhabitants themselves from centers near the burned areas, in some cases people who burn are pyromaniacs, people affected by a mental disorder, but most are people who seek concrete targets, related to economic or cultural issues, such as burning of stubble, pasture improvement, «cleaning» of the «monte» (scrub) or others. Therefore, the burning of the «monte» is for many a necessity, a good in itself, and in any case the problem occurs when it has been impossible to control the direction or intensity of fire, which has involuntarily spread to unforeseen areas that did not interest that they burned.

The fire in the «monte» is not something strange for rural communities; indeed, it has always been used as a tool over management of the «monte» or in its exploitation. Therefore, hardly it can be perceived as something negative, as a «problem». From the perspective of rural communities, who perceived fires as a problem are «people from outside», the urban dwellers and public authorities, who were shocked, and intend to impose «solutions», often not supported by the local population, although younger ones tend to accept the best ecological perspective. Until we resolve this latent conflict of interest, forest fires will persist.

