**Table S4.** Review of the forest and management history of the sampling sites. An exhaustive review of historical documents was done to compile information about socio-economical activities affecting forests: historical documents and maps (*e.g.* Titos 1990); detailed mining reports (*e.g.* Maestre 1858); official information about recent wildfires events and forest management practices (*e.g.* Bonet and others 2016); livestock farming (*e.g.* Moreno-Llorca and others 2016); traditional irrigation ditches (*e.g.* Ruiz-Ruiz 2017) and other studies reviewing the socioeconomic dynamics of forest of Sierra Nevada at different scales (*e.g.* Jiménez-Olivencia and others 2015).

| Use | **Cáñar (CA sites)** | **Güejar-Sierra (SJ site)** | **References** |
| --- | --- | --- | --- |
| **Land use** | Oak Woodlands mixed with a high percentage of croplands even reached high elevation (mainly barley, rye and potatoes). Irrigated crops near the village (“*regadío de vega*”) | Grasslands and shrublands for cattle farming located at high elevations (*i.e.* > 2000m). Then forests formations (oak woodlands) with some croplands (herbaceous mainly and potatoes). Irrigated terraces with tree crops (chestnut trees, cherry trees) | Jiménez-Olivencia and others (2015); Zoido and Jiménez Olivencia (2015); Moreno-Llorca and others (2016); Calatrava and Sayadi (2019) |
| **Forest Management Practices** | Nearby areas were afforested (pine plantations) to avoid soil erosion in 1925, 1928, 1950 and 1970  Selective thinning during 2007 in small area near “*Casa Forestal*”  Tree cleaning near trails-path (2009-2010) | Afforestation of the upper areas of the Genil River basin (1942)  Tree cleaning (2006 - 2007) near our study site (*La Hortichuela*)  Punctual afforestation (creation of small dispersal islands of oaks) (2008) | Bonet and others (2016); Moreno-Llorca and others (2016); J. Navarro and F.J. Cano-Manuel *personal communications;* Romero-Zurbano (1909) |
| **Forest structure** | Inventories of trees made by the Spanish Navy during the second half of 18th century: *new trees*, 2 010 200; *growing trees*, 10 791. For Cáñar site more than two millions of trees were reported, most of them *news*, and no *old* trees were counted, suggesting recent wood felling | Inventories of trees made by the Spanish Navy during the second half of 18th century: *new trees*, 639 550; *growing trees*, 56 700; *old trees*, 220 | Cruz (1991); Wing (2015) |
| **Fires** | Several small fires.  1979: 44 Has of Pyrenean oak forests (near "*Casa Forestal*")  1984: 189 Has of Pine plantations and Holm oak forests ("*El Jaral*")  1994: 65 Has of Pine plantation ("*Puente Palo*") | Not recorded in the area since 1975 | Bonet and others (2014); Moreno-Llorca and others (2016); CMA (2018) |
| **Fruit production (acorns)** | Ancient references indicated traditional exploitation of acorn resources. Auctions of public forests to collect acorns (1927; 1954) |  | Catastro (1752); Mesa-Torres (2009); Bonet and others (2014) |
| **Wood** | Traditional charcoal ("*carboneo*") and firewood extraction activities through history. Several references indicated the firewood activity of this site at least since 1572.  At the beginning of the last century (1900s), 3 - 4 woodcutters collected firewood from Pyrenean forests daily. | Some references of extraction activities for subsistence (1826; 1847). Massive logging during the first decades of 20th century. As a result, several old photos show areas without trees where there are oak forests today (1925; 1932) | Catastro (1752); López (1776); Madoz (1846); Titos Martínez (1997); Ferrer (1999); Jiménez-Serrano and Serrano-Gutiérrez (2004); Mesa-Torres (2009); Bonet and others (2014) |
| **Mining activities** | Not mining activity in the area, only punctual particular excavations | Intermittently exploitation through history. Historical documents indicated two periods of intense mining activity: the second half of the 19th century after the publication of detailed mineralogical reports and during the first decades of the twentieth century until 1960, which is the last year in which there is evidence of the existence of mining activity. Evidences of existence of several furnaces to melt minerals (Cooper) | Maestre (1852); Maestre (1858); Titos (1990); Arnedo (2007); Mesa-Torres (2009) |
| **Quarries** |  | Exploitation of serpentines quarries from 16th to 19th century (*Jaspe Verde*) | Navarro and others (2014) |
| **Traditional irrigation channel** | There is a ditch (“*Acequia de la Era Alta”)* located uphill the CA-High site (*i.e.* >2000 m), which functioned from March to June | Several historical irrigation channels, know as *acequias de careo*, that were used since the Middle Age to cultivated these valleys. Most of them are abandoned and deteriorated, probably at least since 1960s. | Martín-Civantos (2014); Martín-Montañés and others (2015); Ruiz-Ruiz (2017) |

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