

Pinus uncinata Ramond ex DC. Conservation and proposal of management at its southwestern limit of distribution (Castillo de Vinuesa, Soria, Spain)



POLITÉCNICA

M^a Eugenia López Díez, Felipe Martínez García and José M^a Postigo-Mijarra,
U.D. Botánica, Dpto. Silvopascicultura, E.T.S.I. Montes, Universidad Politécnica de Madrid.
E-mails: mariulopezd@hotmail.com / felipe.martinez@upm.es / jm.postigo@upm.es

Pinus uncinata forms forests in the centre and southwest of the Alps and in the subalpine Pyrenees (at around 1700 – 2600 m) (Costa Tenorio *et al.*, 1997). The species reaches the southwestern limit of its distribution at the top of Mount Castillo de Vinuesa (Soria, Spain). The small population on this mountain occupies just 66 ha, but is very important from a geobotanical viewpoint since it is just one of two populations (the other being in the Sierra de Gúdar range in Teruel, Spain) isolated from the main area where the species is found in the Iberian Peninsula (The Pyrenees).

Pinus uncinata in the Iberian Peninsula during the LGM and Holocene

Finds of macroremains of *Pinus uncinata* where it no longer grows

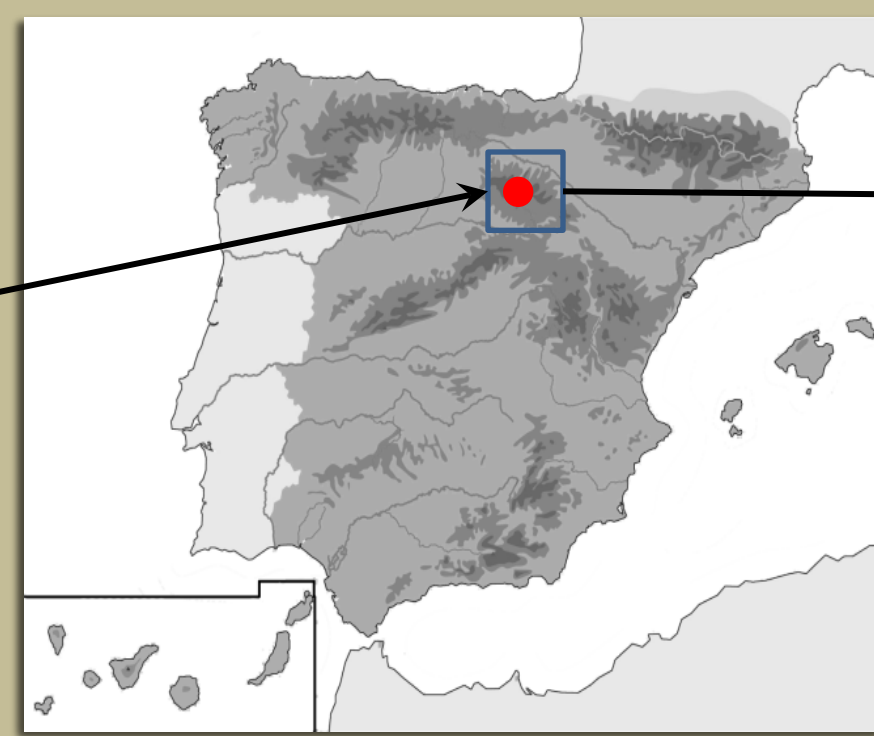
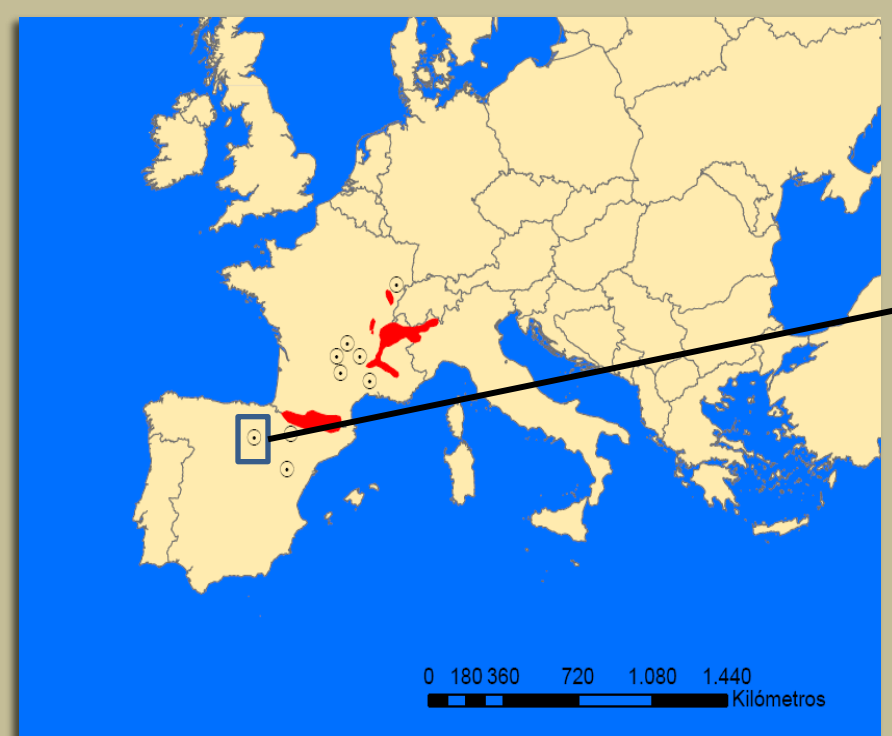
REFERENCE	LOCATION	TYPE OF REMAINS	PERIOD
Menéndez Amor & Ortega Sada, 1958	Lacustrine pollen site of Sanguijuelas (Zamora)	Pollen	Late Glacial and Holocene
Hannon, 1985	Sanabria Lake (Zamora)	Pinecone scale and needles	Late Glacial
Turner & Hannon, 1988	Sanabria Lake (Zamora)	Needle macrofossils	Late Quaternary (Pleistocene)



Possible distribution during the LGM and Holocene



The forest at Castillo de Vinuesa (Soria, Spain)



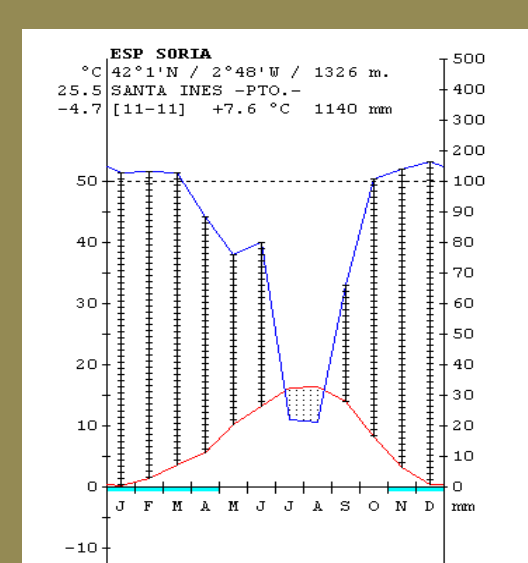
Current distribution of *Pinus uncinata*



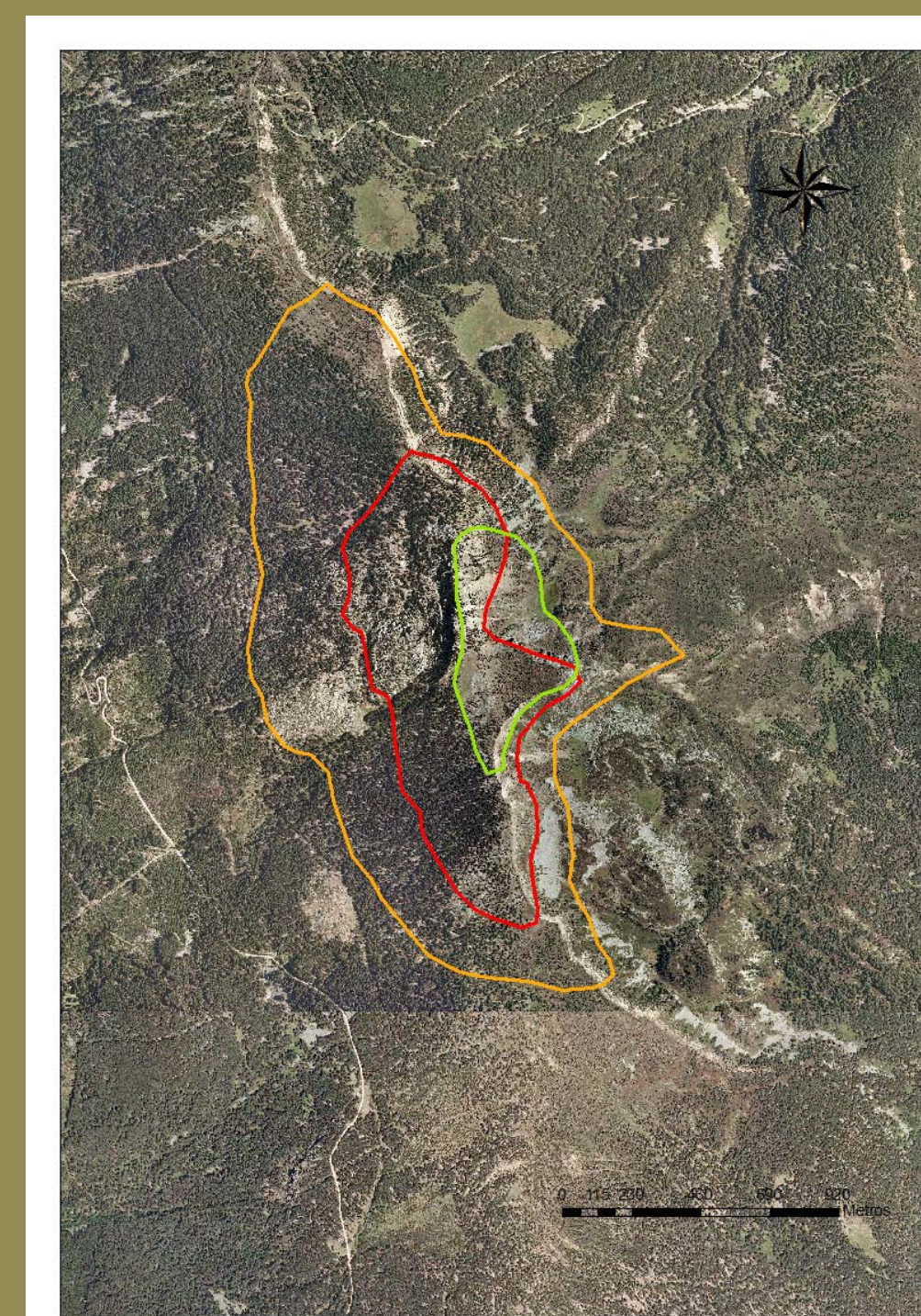
State of Conservation

Risk factors

- **Genetic isolation.**
- **Hybridisation.** The species comes into contact with an extensive mass of *Pinus sylvestris* L. occupying the vegetation level immediately below, giving rise to *Pinus x rhaetica* Brügger. Consequently, the number of genetically pure *Pinus uncinata* is small.
- **Scant regeneration.** The great majority of trees making up the population are mature or old.
- **Strong herbivore pressure.** Especially from domestic animals.
- **General climate.** Mediterranean. →



Management proposal



The studied population is in great danger of disappearing. It is proposed that the immediate protection of a *Plant Microreserve* be awarded (VV.AA., 2007). A series of protection perimeters should be established and specific actions be taken within each.

- **Protection perimeter:** a barrier against threats.
- **Area of maximum interest :** conservation of pure forest.
- **Restoration area:** population reinforcement using material collected from the area of maximum interest.

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