



Native Woodland: creation and restoration on a landscape scale

CREATION AND RESTORATION OF NATIVE WOODLANDS: EXPERIENCES AT 'SIERRA DE GUADARRAMA' NATIONAL PARK.





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1.- LOCATION





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2.- THE PARK IN NUMBERS

25th of June
2013.

DECLARATION
DATE



SAC ES3110002 'Cuenca del Río Lozoya y Sierra Norte'.
SAC ES310004 'Cuenca del Río Manzanares'.
SAC ES3110005 'Cuenca del Río Guadarrama'.

N2000 SITES



SIZE



33,960has: Park.
62,687.26has: Peripheral Protection Zone.

OTHER FORMS
OF PROTECTION



Peñalara's massif wetlands included in the Ramsar Convention List since 2006.

2 Biosphere Reserves:
Cuenca Alta del Manzanares BR
Real Sitio de San Ildefonso-El Espinar BR
declared by UNESCO.

HIGHEST PEAK



Peñalara Peak
2,428m.

PROTECTED
SPECIES



446 Flora species known to be 'highly significant'.
83 endemic plants of the Iberian Peninsula.
59 protected species.

133 birds: 29 protected.
59 mammals: 21 protected.
23 reptiles: 8 protected.
15 amphibians: 7 protected.
17 fish: 9 protected.
124 butterflies.

WOODLAND
COVER



48% of the surface in the National Park and 85% including the Peripheral Protection Zone.



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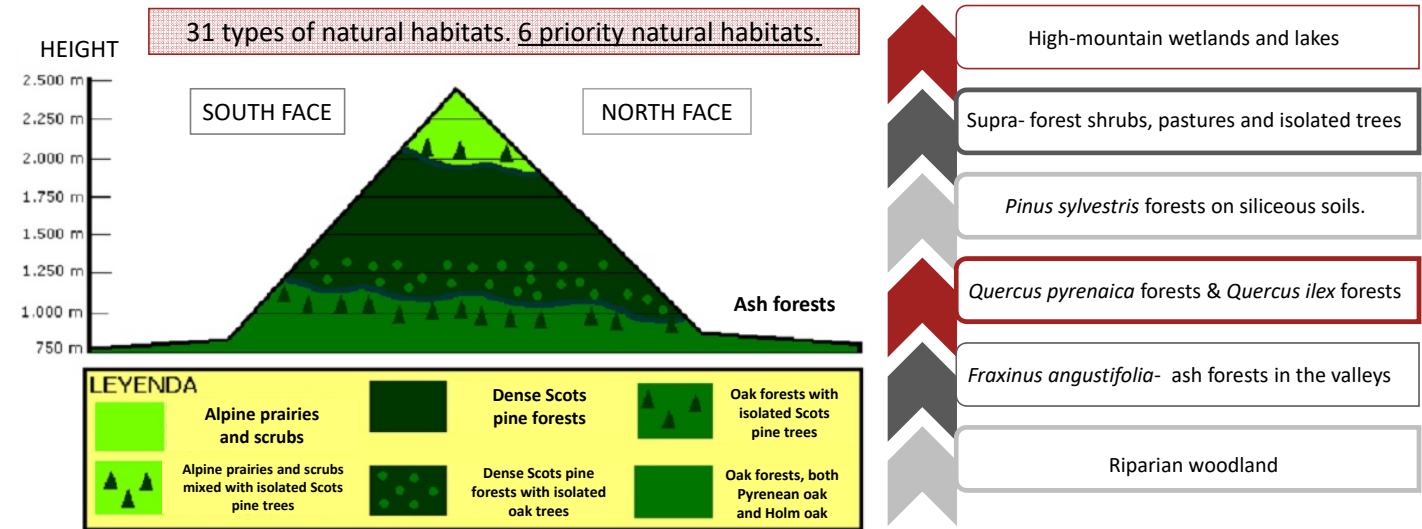
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3.- HABITAT AND SPECIES





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3.- HABITAT AND SPECIES

Pine Forests

Scots pine -*Pinus sylvestris* var. *iberica*

Dominant species: *Pinus sylvestris* var. *iberica*.

Distribution range: 1700 - 2000 m high.

Undercanopy species: Hawthorn (*Crataegus monogyna*), Common rowans (*Sorbus aucuparia*), White beam (*Sorbus aria*), Wild rose (*Rosa canina*) and Montpellier maple (*Acer monspessulanum*).

Wildlife: Black vulture (*Aegypius monachus**), Snake-eagle (*Circaetus gallicus*), European honeybuzzard (*Pernis apivorus*), Spanish imperial eagle (*Aquila adalberti**), Moon Spanish moth (*Actias isabellae**), European otter (*Lutra lutra**).





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3.- HABITAT AND SPECIES

Oak Forests

Pyrenean oak- *Quercus pyrenaica*

Holm oak – *Quercus ilex* sbsp. *ballota*

Dominant species: *Quercus pyrenaica* (northern and more humid areas), *Quercus ilex* sbsp. *ballota* (southern and drier areas).

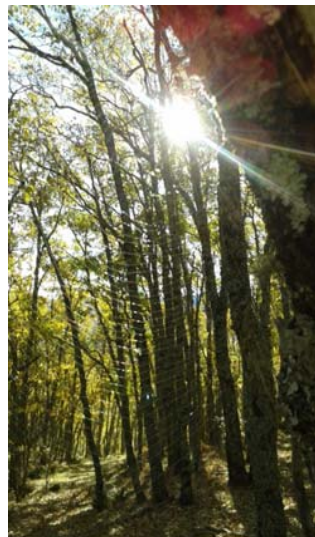
Distribution range: 1100 - 1700 m high (Pyrenean oak); 700 – 1.400m high (Holm oak).

Undercanopy species:

❑ Hawthorn (*Crataegus monogyna*), wild rose (*Rosa canina*), and *rubus* sp : *Q. pyrenaica*.

❑ *Cistus ladanifer*, Prickly juniper (*Juniperus oxycedrus*), wild rose (*Rosa canina*) and *rubus* sp: *Q. ilex*.

Wildlife: Roe deer (*Capreolus capreolus*), Wild boar (*Sus scrofa*), Stone marten (*Martes foina*), European polecat (*Mustela putorius*), Least weasel (*Mustela nivalis*), Common genet (*Genetta genetia*), stag beetle (*Lucanus cervus**).





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3.- HABITAT AND SPECIES

Riparian Woodlands

The riparian vegetation consists of:

- ☐ Grey willow (*S. atrocinerea*).
- ☐ Narrowed-leaf ash (*F. angustifolia*).
- ☐ Downy birch (*B. pubescens*).
- ☐ Alder buckthorn (*Frangula alnus*).
- ☐ Hawthorn (*Crataegus monogyna*).
- ☐ Aspen (*Populus tremula*).
- ☐ Walnuts (*Corylus avellana*).
- ☐ Yews (*Taxus baccata*).
- ☐ Wild rose (*Rosa canina*).
- ☐ Rubus sp.
- ☐ Briar (*Erica arborea*).

Upper stream, those groves turn into isolated trees mixed with oaks and pines.



Woodland remnants

- ☐ Yew (*Taxus baccata*) and holly (*Ilex aquifolium*) groves.
- ☐ Common ash (*Fraxinus excelsior*) groves .
- ☐ Wych Elm (*Ulmus glabra*) groves.
- ☐ Spanish juniper (*Juniperus thurifera*) groves.





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3.- HABITAT AND SPECIES

Vegetation above Tree-line

Dominant species: Broom “Piorno” (*Cytisus oromediterraneus*) and juniper (*Juniperus communis subsp. alpina*) scrubs.

Distribution range: from 2000 m up to some summits.

Undercanopy species: *Festuca curvifolia* grasslands, *Nardus stricta* grasslands, *Saxifraga pentadactylis subsp. willkommiana*, *Senecio pyrenaicus* and *Digitalis purpurea*, *Carex nigra* and *Carex echinata*.

Wildlife: Spanish ibex (*Capra pyrenaica*), alpine accentor (*Prunella collaris*), red-billed chough (*Pyrrhocorax pyrrhocorax**), bluethroat (*Luscinia svecica*), iberian hare (*Lepus granatensis*); lizard (*Iberolacerta cyreni**). Amphibians such as the midwife toad (*Alytes obstetricans*), salamander (*Salamandra salamandra*), the Iberian frog (*Rana iberica*) or marbled newt (*Triturus marmoratus*).





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OBJECTIVES

ACTIONS

MONITORING



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4.- FOREST MANAGEMENT STRATEGY: OBJECTIVES

Improvement of the conditions of existing woodland: enhancing inter & intra biodiversity and creating a more extensive and connected forest network, in order to make them more resilient to changing climate, pest and disease risk:

- ☐ Enhancing the conditions of forests of plantation origin: working towards naturalization.
- ☐ Restoring lost or vulnerable forests ecosystems.
- ☐ Protecting forests from disease and invasive species (*Cupressus arizonica*).
- ☐ Promoting Forest Certification on native pine forests.





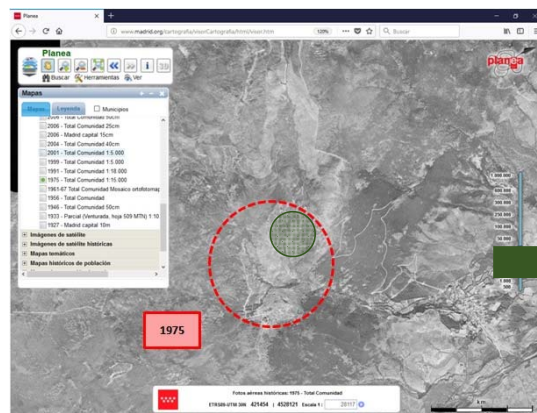
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4.- FOREST MANAGEMENT STRATEGY: ACTIONS

Naturalization of Scots pine woods of plantation origin

Artificial forests were planted in 1975 on lands where pine and oak had been removed by private owners in order to transform those previous forests into grassland - for grazing.





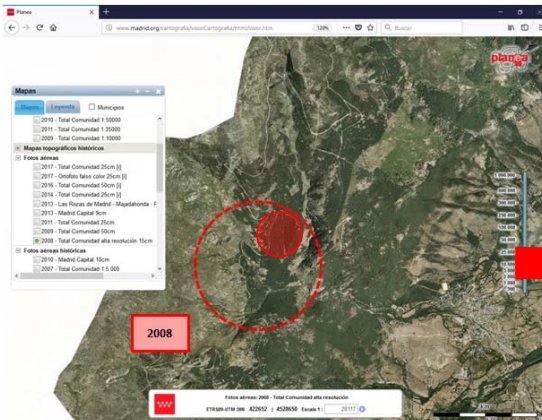
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4.- FOREST MANAGEMENT STRATEGY: ACTIONS

Naturalization of Scots pine woods of plantation origin

Now the trees are forty years old and cover the whole area conforming a monoespecific regular pine forest where the artificial straight lines are still visible.





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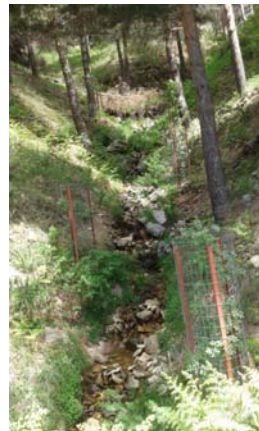
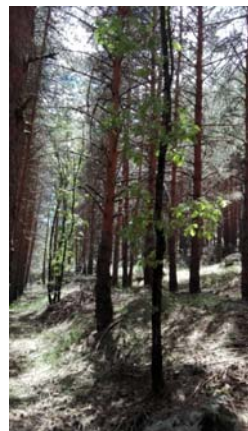
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4.- FOREST MANAGEMENT STRATEGY: ACTIONS

Naturalization of Scots pine woods
of plantation origin

Creation of mixed forests more resilient to global change, pests and wildfire: enhancement of oak groves, yew groves and other broadleaved species through **selective thinning and felling**.





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4.- FOREST MANAGEMENT STRATEGY: ACTIONS

Naturalization of Scots pine woods of plantation origin



Restoration of riparian woodlands on mountain brooks and streams:

- ☐ Planting seedlings (birch, aspen and ash) protected by fencing.
- ☐ Planting stakes of grey willow to create the shrub canopy.



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4.- FOREST MANAGEMENT STRATEGY: ACTIONS

Eradication of non-native species

Progressive **elimination of Arizona cypress** (*Cupressus arizonica*) - invasive species- of planted origin, **especially near mountain streams** through selective felling promoting native species: broadleaved species: *Salix atrocinerea*, *Sorbus aucuparia*, *Fraxinus angustifolia* and *Pinus sylvestris*.





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4.- FOREST MANAGEMENT STRATEGY: ACTIONS

Preservation of priority habitat Nature 2000 network

Creation of **ecological corridors** through **plantation and individual fencing** to avoid fragmentation and enhance connectivity among different groves of vulnerable remnant species such as:

- ❑ Yew (*Taxus baccata*) and holly (*Ilex aquifolium*) groves.
- ❑ Common ash (*Fraxinus excelsior*) groves .
- ❑ Wych Elm (*Ulmus glabra*) groves.
- ❑ Spanish juniper (*Juniperus thurifera*) groves.





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4.- FOREST MANAGEMENT STRATEGY: MONITORING



Old-growth natural forests

Locating, monitoring and enhancing their expansion through indicators such as:

- ☐ Vegetation age structure.
- ☐ Presence of old trees.
- ☐ Presence of dead wood standing or lying on the floor and debris.
- ☐ Undercanopy composition and structure.

Following the forms provided by **LIFE RED BOSQUES** (led by Europarc Spain).

<https://www.europarc.org/news/2018/03/old-growth-forests-manual/>





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4.- FOREST MANAGEMENT STRATEGY: MONITORING



Monitoring the actions

Monitoring the effects of actions taken on pine woods of plantation origin, non native species and Nature 2000 habitats:

- ☐ **Natural clearances and clearances opened by felling works:** natural regeneration and species present.
- ☐ Broadleaved species and remaining pine individuals' **growth and natural regeneration after thinning and felling works** in pinewoods of plantation origin.
- ☐ **Plantation evolution** under pine cover and along the streams: number of individuals, growth and natural regeneration outside the plantation area.



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5.- CURRENT AND FUTURE CHALLENGES

CURRENT CHALLENGES:

- ☐ After selective felling eliminating **Cupressus arizonica individuals**, the species which is apparently **naturally regenerating faster** in the clearances created is *Cupressus arizonica*.
- ☐ In some fenced areas there is **not enough light for the growth of broadleaved species** planted on the clearances opened by the felling of pine trees. The individuals planted ten years ago don't show any signs of growth.
- ☐ **Absence of natural regeneration in oak forests**, mainly because of livestock; we improving our Livestock Management Plan to reduce grazing densities in certain areas to allow natural regeneration.

FUTURE CHALLENGES:

- ☐ Current challenges unsolved.
- ☐ **Scots pine forests** seem to be **very sensible to climate change** specially monoespecific ones, so they might be replaced. Even now, at lower areas, broadleaved natural regeneration is dominant and pine regeneration inexistent.
- ☐ **Pyrenean oak forests** might be **replaced by** species more adapted to drier and hotter conditions: **Holm oak**.
- ☐ ...



EUROPARC
Conference 2018
Cairngorms National Park
Scotland

Thank you
Tapadh leibh!

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Cairngorms National Park, 19th September 2018



'SIERRA DE GUADARRAMA' NATIONAL PARK