

Is it appropriate protective figure “Plant Micro-Reserves” to protect tree species? The example of *Betula pendula* subsp. *fontqueri* in “La Garganta de los Caballeros” (Ávila)

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Introduction

Micro-reserve: a tool for threatened plant conservation.

The figure of protection "micro-reserves" was created in the **Region of Valencia** (ANONYMOUS, 1994) with the aim of protecting endangered plant species. This is one of the areas of greatest floristic richness and uniqueness of the western Mediterranean. In this area rare, endemic or threatened vascular flora has a peculiar distribution: they appear to form small fragments spread over the entire region (LAGUNA, 1994; LAGUNA, 2001)

The protection of every these small populations of great scientific value has significant challenges. It doesn't try to protect every species that set out in Annex IV of the by then existing Law 4 / 1989 (repealed in 2007), or to protect to the most ecological level with the creation of Natural Protected Area but an intermediate level: the plant community of small size. According to the decree: "as Micro-Reserve will be declared the natural parcels of land under 20 hectares that contain a high concentration of rare plants, endemic, threatened or of high scientific interest" (ANONYMOUS, 1994).

Of course, the statement of an area as micro-reserve carries certain prohibitions that are harmful to the vegetal community.

Other regions follow the example of Valencia

In 1999 the community of **Castilla-La Mancha** takes the figure of micro-reserves (ANONYMOUS, 1999). The most notable difference is that it includes the fauna and doesn't have a length limit for the declaration of these areas.

The Micro-reserve "Garganta de los Caballeros" (Ávila)

The proposed area as micro-reserve is located in the Regional Park "Sierra de Gredos". It includes a narrow strip with an extension of 68 ha located in a mountain area called "Garganta de los Caballeros" (Picture 2). The proposed area begins about 3 kilometers from the lagoon called "Laguna de los Caballeros". Includes the northern side of the gorge and the channel, for an approximate length of 3 kilometers, where the river meanders with a slope of approximately 7%. At the bottom, runs a continuous stream of medium-high mountain, (comprising an altitudinal interval within 1400 and 1700 m). The walls of the gorge are wholly or partly covered by semistable debris and have a steep slope. Fontqueri birch (*Betula pendula* subsp. *fontqueri*) lives on these screes of rocky blocks and in fractures of siliceous materials, often covered with snow during the winter (picture 3 and 4). It is found preferentially in the North aspect on a steep slope (60% approx.) and lives associated with upwelling groundwater that keeps them humid in the summer (SARDINERO, 2004).

In cases of higher surface moisture some seedlings of other species are grouped around birches as *Erica arborea*, *Sorbus aucuparia* and *Salix atrocinerea*. At his feet are some megaphorbia (typical communities of the Euro-Siberian region, that are relict in areas with Mediterranean climate) as *Dryopteris oreades*, *Doronicum carpetanum*, *Athyrium filix-femina*, *Adenostyles alliariae*, etc. Other interesting plants that are located in this ecosystem are *Aconitum vulparia* subsp. *neapolitanum*, *Conopodium pyrenaicum*, *Lilium martagon*, etc.

For those fontqueri birches it has been described the supramediterranean association bajaro-tormantina *Doronicum carpetani-Betuletum fontqueri* Sardinero & Rivas Martínez (SARDINERO, 2004).



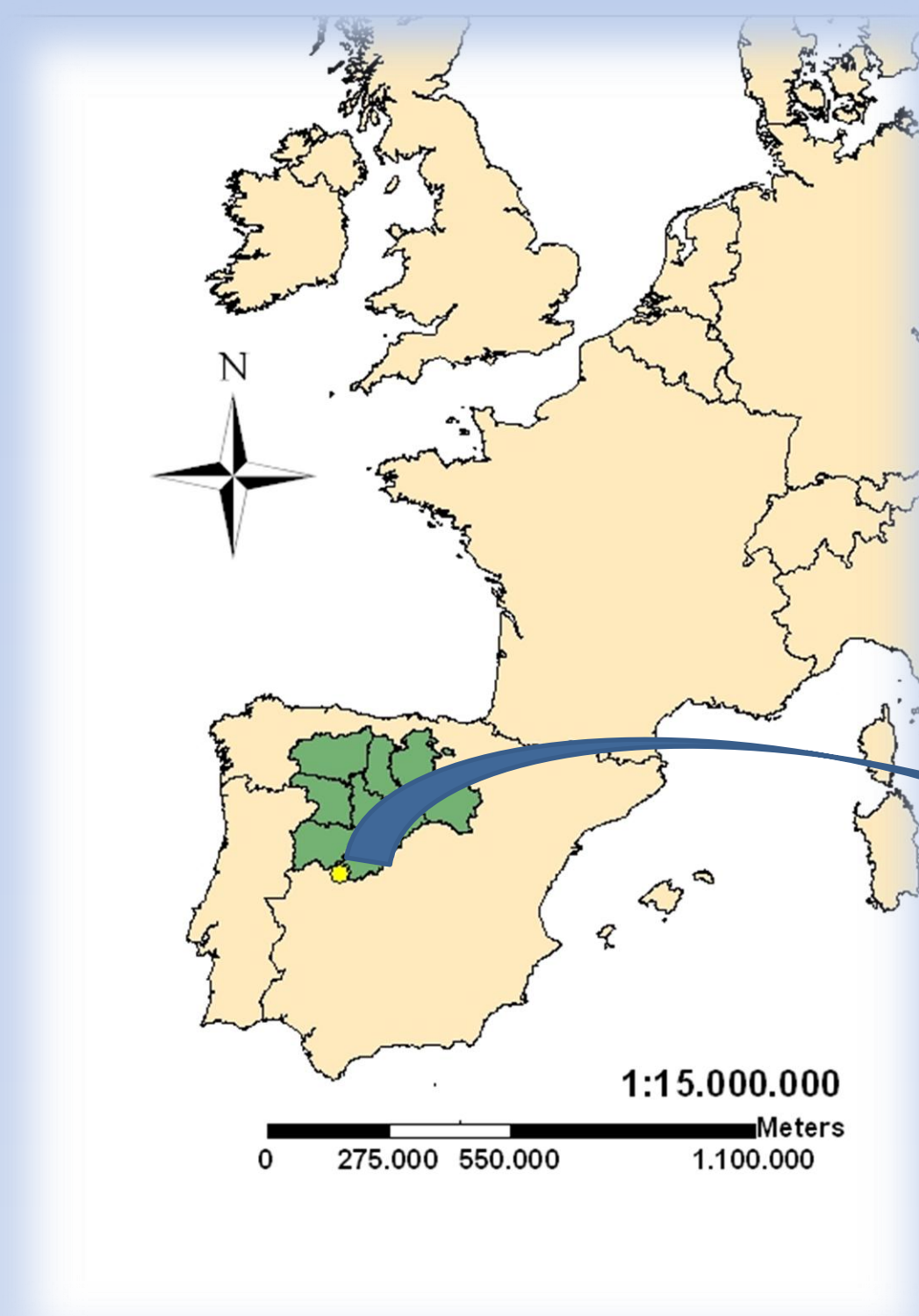
Picture 5: *Aconitum vulparia* subsp. *neapolitanum*



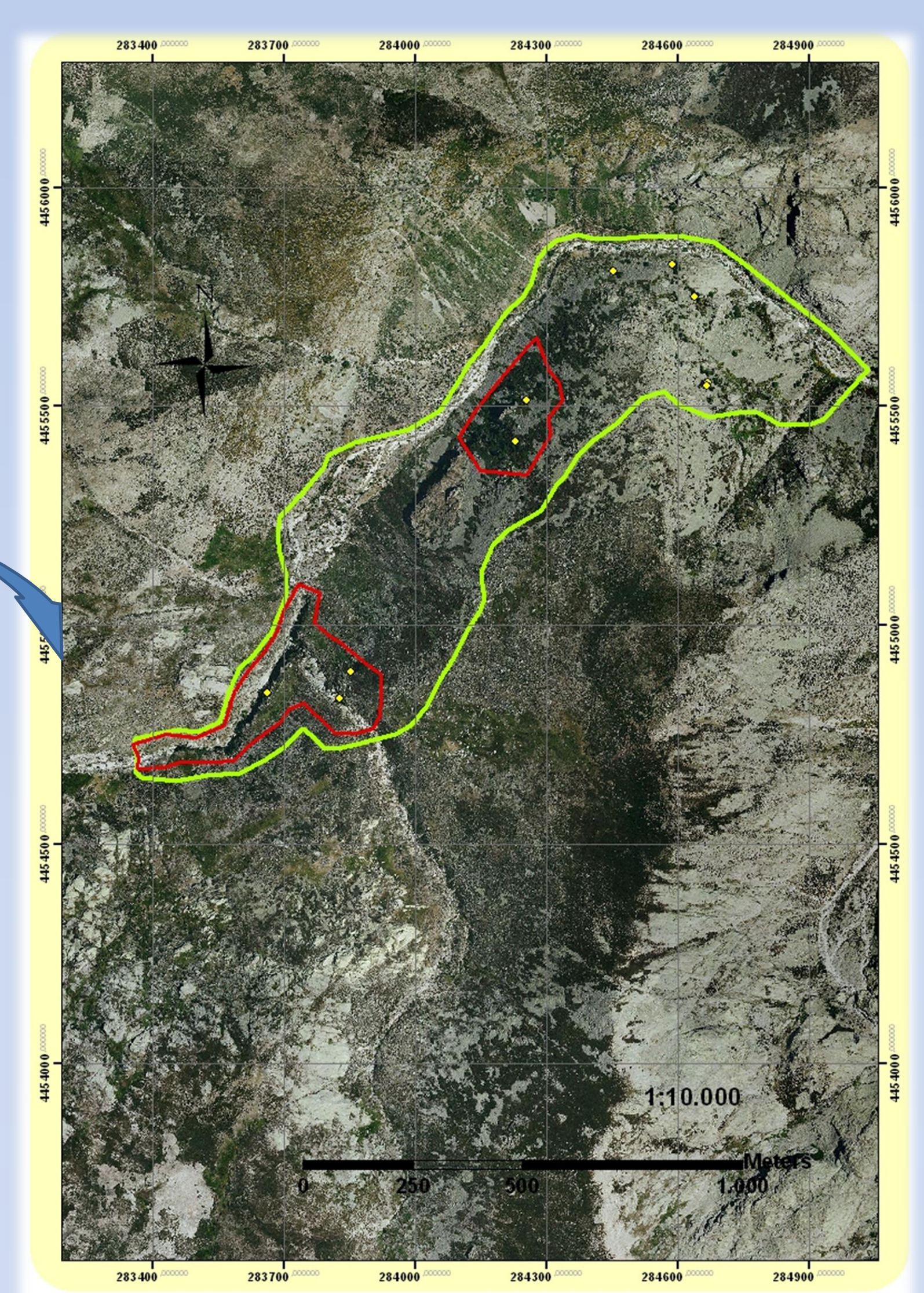
Picture 6: *Lilium martagon*



Picture 7: Seedling of *Betula* on scree



Picture 1: Micro-Reserve's location



Picture 2: Perimeter of the Micro-Reserve.

Legend:

- Perimeter of protection (67.6 ha)
- Maximum interest area (4,2 and 8,4 ha in W-E direction)
- Situation of floristic inventory



Picture 3: Group of birches on a steep slope.

Picture 4: View of a birch in the Northern side of "La Garganta de los Caballeros"

Reasons for their protection

The main objective of the proposed micro-reserve is the protection of one of the two populations of fontqueri birch in Castilla y León. There are several reasons for adopt this measure of protection.

- The **paleobotanic and chorological significance** of this birch in the Iberian flora. After different glacial – interglacial periods, birch live here at their final area (COSTA ET AL. (ED), 1997). With the increase of temperatures during the late glacial, birch expanded. Later, it declined at the expenses of more competitive species, better adapted to a Mediterranean climate. So this species of Eurosiberian optimum needs for careful conservation management when located in Mediterranean areas.
- **Ability to colonize disturbed areas.** This role as pioneer ensures a tree cover that protect the soil from erosion and landslides. (Picture 7)
- Fontqueri birch is included in the list of **Protected Flora of Castilla y León** (Decree 63/2007) as "preferential attention" (Annex III) (ANONYMOUS, 2007)

Desirable management measures

1. **Precise preventive actions** like reducing predation, preventing actions or works that changes the hydrological functioning and the establishment of a collection and storage of genetic resources.
2. **Detailed studies** about the biological and ecological processes related to the survival of the species.
3. **Promotion and Education**

Conclusions:

This proposal of Plant Micro-Reserve (MARTÍNEZ ET AL. 2010 INÉD.) complies with the extension (200 ha) and has some advantages in the field of conservation.

- 1) Apply a protective management tool on the target species.
- 2) This species could act as a protective umbrella of other equally interesting relict populations and possibly threatened.

In general, protecting a tree species, give managers a tool for protecting an ecosystem, the ultimate objective that should have a conservation policy.

Factors of threat

Grazing (140)*

Forest Plantations (161)* and Reforestation (163)*

Construction of infrastructure in general

Alteration of hydrological functioning (850)*

Fire (948)*

*Coding of threats made by the European Commission in the form Natura 2000 (European Commission, 1997).

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