

## AN OVERVIEW OF MICRO-RESERVES AND SITE-BASED APPROACHES FOR IN SITU PLANT CONSERVATION.



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## 2nd Mediterranean Plant Conservation Week

“Conservation of Mediterranean Plant Diversity: Complementary Approaches and New Perspectives”

***In memoriam,***  
to a good friend,  
one of the bravest fighters  
for plant conservation,  
and a big promoter of the  
plant micro-reserves :  
**Hugh Syngé (1951-2018).**



From Plantlife website:  
<https://www.plantlife.org.uk/uk/blog/obituary-hugh-synge-1951-2018>



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## Plant Micro-reserve (PMR)

A PMR is a small protected area, mainly focused in plant protection / conservation.

There are no rules on how to understand ‘small’.

There are not a common legal way, each region or country can adopt its concept in their own legal and social framework.



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## A pioneer idea

The concept of PMR was proposed the first time in the Valencian Community (Spain) by 1988-1989, and written in an edited document in 1991.

It is based on the common property of rare and/or endemic Mediterranean wild plants to join in some microhabitats, which even in some cases are mainly compound by that species.



## A pioneer idea

The Valencian concept of PMR is not only thinking of reserve sizes. A PMR ‘in the Valencian style’ must be:

-A piece of a network –and consequently it must have a multi-sites and multi-species strategy-, so a PMR should not be managed independently.

-A site where traditional activities benefiting targeted plant species, should be maintained.

-A place able –and even designed- for plant conservation practices (active conservacion).



## Turning the idea into reality

Thanks to the support of the European Union’s LIFE funds for the period 1993-1998, the initial idea started to turn into reality.

1994: Valencian Decree to create the legal figure of Plant Micro-reserve (PMR).

1998: Declaration of the first PMR (just 20 years ago!)



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## The Valencian PMR model

Sites up to 20 ha, rich in rare, threatened or endemic plants.

They can be:

- directly designated in public areas managed by the Valencian regional government (Generalitat Valenciana).
- on private sites whose owners have requested the legal protection.



## The Valencian PMR model

The declaration regulation is published in the official regional gazette, and directly includes a synthetic management plan.

The management plan is formed by:

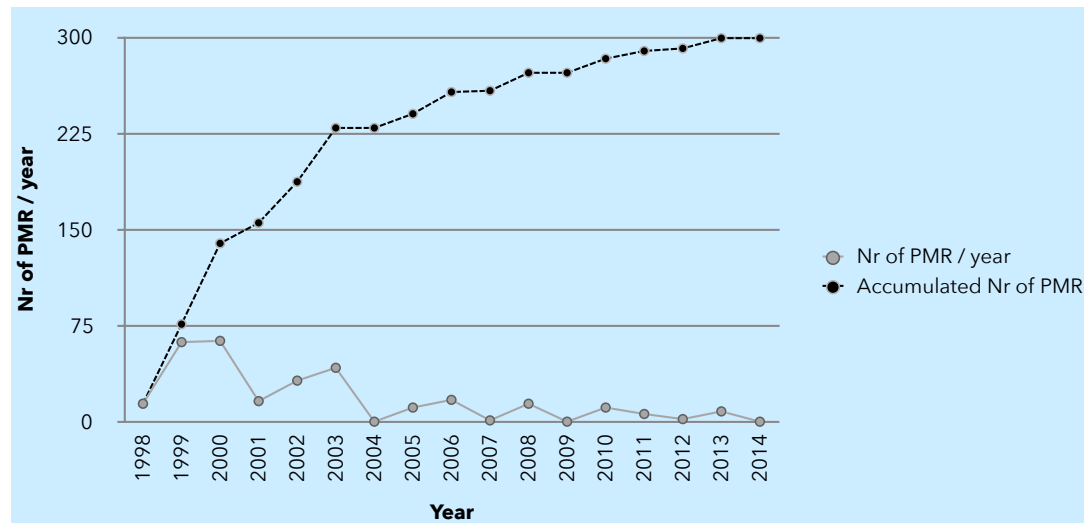
- common actions for all the PMR (i.e. seed harvesting for the regional germplasm bank)
  - specific actions for in situ management -i.e. to recover threatened species
- through a series of actions:





## What we have after 20 years of actual PMRs?

-304 PMRs : 238 public + 66 private\*  
-2.362,4 ha (0,1% of regional land) [7,77 ha/MRF]



## What we have after 20 years of actual PMRs?

Private model includes:

-True private lands proposed and managed by their landowners  
(individuals [17 PMRs] or NGOs [10 PMRs])

-Municipal lands which are managed without intervention of the regional  
government (as if they were private, but managed by city councils) [39 PMRs]



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## Plant diversity in the PMR network

The Valencian PMR network holds:

25.180 populations belonging to 1.817 species (catching at least 1 population per species, for the 56,8% of the regional diversity of vascular plants)



## Plant diversity in the PMR network

The PMR network houses populations of:

319 endemic Spanish species living in the Valencian Community.

224 protected species [protected by the Valencian, Spanish or EU's regulations].

838 species rare or very rare for the region.



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## ... but the most important!

1) The PMR Network accumulate hundreds of conservation, educational and scientific activities over these 20 years.



## ... but the most important!

2) The Valencian PMR network has inspired the legal establishment of (biological / natural) microreserves or PMRs in other areas around Europe and the Mediterranean, as well as project to prospect future networks.



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## Enlarging the network

Adapting the concept to their own legal rules or uses, and in some cases also supported by EU's LIFE funds, (biological, natural), MRs and/or PMRs have been set up around the Mediterranean:

-Crete (Greece)

-Cyprus

-Lebanon

-The Karst region (Slovenia)

-Bulgaria

-Several autonomous communities (=regions) in Spain: Castilla-La Mancha, Baleares, Castilla y León.



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## It's about growing network

The proposal is not to promote a static network of protected sites, but incorporate progressively more sites

i.e., when a new species is described, when a local community is interested to have a new PMR, etc.



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## It's about growing network

As a sample, the Cretan network of PMRs, initially formed by 7 sites in the province of Chania (Western Crete) set up thanks to the support of the EU's LIFE funds in 2004-2008, has recently grown (2018) establishing a new PMR for the endemic species *Hostrissea dolinicola* in Central Crete.



\*It deals with a Top50 species of the Mediterranean islands, so having information in the website of the IUCN's Mediterranean Plants Specialist Group:

<https://top50.iucn-mpsg.org/species/41>

Pictures taken from the website, and belonging to the Mediterranean Plant Conservation Unit of MAICh.



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## **But, are PMRs the only solution to ensure the conservation of small KBAs or IPAs?**

Of course not, there are parallel (and in some case icoming from centuries ago) initiatives, usually maintained / promoted ‘bottom-up’, from the local communities – instead of the more usual ‘top-down’ approach, following governmental or external initiatives –.

A few clear examples around the Mediterranean are

- 1) the community-managed forest patches
- 2) the sacred sites and other linked to religious events
- 3) for some cultures, cemeteries or other strictly respected sites –i.e. places traditionally thought to host miracles, appearances of saints or prophets, etc.

see: VALDERRÁBANO, M., GIL, T., HEYWOOD, V.H. & DE MONTMOLLIN, B.. 2018. *Conserving wild plants in the south and east Mediterranean region*. IUCN. Málaga.



## Locally/Traditionally respected sites

Example: Forest of 'Font Roja', Valencian Community

- Inherited by Christians from Arabs in 1251(probably as a sacred forest, very well preserved)
- Strictly protected by the City Council to preserve hunt and wood, since 1332
- It is thought that the site housed a Marian appearance in 1653
- Since the n themiracle site is considered a holy place by devout Catholics (i.e. society of hunters don't allow to hunt)
- Protected by the Generalitat Valenciana as Natural Park in 1987, and housing several PMRs



## Taking advantage of the existence of other protection measures

Archaeological sites, and other places protected or locally respected.

-For its drafting, the LIFE project Cretaplant took advantage for the archaeological protection of some sites holding endangered plant species (i.e. Agria Gramvousa for *Anthemis glaberrima*).

-The project on Ancillary Botanic Gardens in Lebanon propose to establish living collections of plants on sites which already have other cultural protection (i.e. archaeological sites) , or a popular, consolidated local use, as a ‘bottom up’ initiative.

Talhouk, S.N., Abunnasr, Y., Hall, M., Miller, T. and Seif, A. (2014). ‘Ancillary botanic gardens in Lebanon – Empowering local contributions to plant conservation’. *Sibbaldia: The Journal of Botanic Garden Horticulture* 12:111-129



## ***Quasi in situ* gardens / plant collections**

The *quasi in situ* strategy (Volis & Blecher 2010) proposes the establishment of collections of endangered plant very close to natural populations of the same species, in order to act as donor of genetic material -i.e. through pollen or seeds- to restore it.

Examples in Spain:

-Valencian Community: Plantation of the relict *Frangula alnus* subsp. *baetica* in gardens and picnic forest areas with natural springs, in order to produce and disperse seeds which will generate new wild populations in appropriated sites nearby

-Catalonia: After failing the direct reintroduction of *Marsilea quadrifolia* in rice crops and water channels in the Natural Park Delta del Ebro, the species has been planted ex situ (but very close to the rice fields), in the demonstrative/didactic rice field housed by the Natural Park's Ecomuseum. The dispersal of sporocarps by birds or the irrigation channels is expected in a future.

Volis, S. & Blecher, M. (2010). Quasi in situ: a bridge between ex situ and in situ conservation of plants. *Biodiversity and Conservation* 19: 2441-2454



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## Private long-term agreements

Custodianship (Land stewardship) established through long term agreements between landowners and conservation NGOs or research centers is a usual way for plant conservation in some European countries (Belgium, Netherlands, etc.).

The consolidated experience of custodianship in Catalonia, and progressively in other close regions in Spain (Valencian Community, Balearic Islands, etc.) is establishing good ‘de facto’ plant reserves.

In countries having a long-term experience in custodianship, as well as in the conservation management of lands owned by the same NGOs, the environmental authorities use to consider these sites as true nature reserves, even having no legal status of protection.

These initiatives often are developed on small sites, so their effectiveness can be similar to PMRs



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## Final remarks

PMRs and other site/community-based models can add to protect small sites rich in remarkable or endangered species.

The Mediterranean countries often holds intensively fragmented landscapes whose management for plant conservation only could well performed though small-site solutions.

The combination of small-site approaches and bigger natural protected areas can add to solve the difficulty to protect designated KBAs around the Mediterranean basin.





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