

# **VALENCIAN MICRO-RESERVES EXPERIENCE. A PRACTICAL APPROACH MANAGING SMALL PROTECTED, NATURAL AREAS\***

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*\*This paper explains the results of the LIFE-Nature project B4-300/94/0766 'Creation of a plant micro-reserves network in the Valencian Community', co-financed by the European Commission and the Generalitat Valenciana, and first related results of its continuity by means of the LIFE-Nature project B4-3200/99/4167 'Conservation of priority habitats in the Valencian Community'*

## **ABSTRACT**

The plant micro-reserves (PMRs) project, started by the Generalitat Valenciana (regional administration of the Valencian Community, Spain) in 1994, has yielded till today the creation of 155 small protected zones (831 ha, 210 endemic species contained) devoted to ensure the conservation and the future study of a big part of the Valencian singular wild flora. This paper explains the main procedures and the results obtained.

## **INTRODUCTION**

The Valencian Community (Spain) is known as one of the richest biodiversity regions of Europe, mainly for vascular plants. Its 23.260 sq km hold 3129 plant vascular taxa (species and subspecies, after MATEO & CRESPO, 2001), 350 of them being endemic to Spain (LAGUNA, 1998); 60 species are absolutely endemic to the region. The Valencian territory is characterized by a wide range of climatic, edaphic and vegetation types, and its lands have been intensively disturbed by the human activity since the Neolithic (COSTA, 1999). As a result of these conditions, its landscapes are usually fragmented into very small units. In other hand most endemic and relict species live on the so-called 'azonal' and 'intra-zonal' habitats (areas whose evolution does not depend on climatic succession, such as rocks, salt affected soils, dunes, ponds and so on); 97% of the endemic vascular plants found here live out of the forests or the more evolved shrublands, and 60% are clearly linked to non-climatic vegetation (LAGUNA, 1994).

Most endemic and relict plants are strongly dependent on their habitats, being very stenotic taxa. Thus, their conservation can be ensured through some measures of habitats protection and management. However, the traditional models of protected areas are devoted to guarantee the conservation of big territories, or to give strong protection measures to the small fragments of landscape -that usually means a wide reject from local populations-. In other

hand, plants are less popular than animals, so the declaration of protected areas to ensure their conservation becomes frequently a problem (LAGUNA, 1999a, b, c and d).

The regional Department of Environment (locally called 'Conselleria de Medi Ambient, CMA), fully empowered by the Spanish laws to develop any measures and legal rules to ensure the protection of species and habitats in the Valencian Community, was interested in the establishment of some kind of reserves to ensure the long-term study of wild plants, but conserving if possible the direct influence of traditional, positive or neutral human activities. The traditional protected areas (National Parks, Nature Parks, Nature Reserves) provided by the Spanish and Valencian laws (4/1989 for the national territory, 11/1994 for the region) were not enough flexible tools to permit this alternative model of plant preserves. Simultaneously, the plant officers of the regional administration noticed that some conservationist landowners and municipalities were interested in the development of active management for plant conservation in their properties, but they usually should fight against the above cited laws, that used to promote the protagonism and responsibility of public administrations.

After a large group of consultations, seeking the advice of the regional universities, conservationist NGOs and all the professional botanists and plant researchers living in the Valencian Community, the regional Council of Environment passed the Decree 218/1994, creating the new designation for plant protection named 'plant micro-reserve'. Special characteristics of this legal type have been explained by LAGUNA (1999a, 2001 and in press; LAGUNA & al., 2001).

## **MATERIALS AND METHODS; EXPLANATIONS ON THE LEGAL MODEL**

The selection of plant micro-reserves (PMRs) have been made following three systems:

- reports made by expertises
- advices received from very experienced, local people -notably local botanists and forest keepers-
- progressive cartographical approximation, mapping the density of endemic and relict plants, after the data extracted from bibliography and herbariums.

The proposals for new PMRs must be supported for at least 1 professional botanist, titled PhD in Botany, Plant Biology or Plant Ecology. The selected plots are measured and delimited using GPS devices and transferred to a GIS, managed both with ArcView and Microstation informatic programmes. A professional botanist also must draft a management plan, enclosing future prohibitions, and active conservation tasks.

Proposals of PMRs from private landowners and municipalities must enclose similar botanical studies made by PhD botanists, and GPS measures signed by engineers allowed in law (in Topography, Public Works and so on).

Each year, since 1997, the regional government calls for subventions to create new private and municipal PMRs. Interested landowners, NGOs and municipalities, must present their proposals, applying for three kinds of aids:

- 1) to join the PMR network
- 2) to develop active conservation tasks
- 3) to purchase lands where future PMRs will be established -this option is only opened to Universities and research centres, and to non-profit NGOs and conservationist foundations.

The first type is a kind of compensation to offer the land for plant conservation, as an irreversible action. This compensation is given in one unique payment -so future inheritors or new landowners never receive new compensations-, and its economic value is very reduced. Subventions are approximately comprised between 240,0 and 1.800,0 EUR/ha, being fixed for each vegetation type (i.e., 240 EUR/ha for rocky grounds, abandoned ancient cultures, etc.; 1.800,0 EUR/ha for wetlands). These subventions can be increased up to a 50% if the land holds priority habitats of the Directive 92/43/CEE (European Union's Directive of Habitats), species of annexes II or IV of this Directive, or strictly protected species listed at the national or regional levels. In exchange of this support, the individual or collective, public or private landowner, must inscribe a modification in the land register, under a public document. To apply for supports, the landowners must sign papers fixing in a public document their will to follow the rules of the protected area. If the landowners break afterwards his promise, he must pay back all the subventions received and their bank interests, but their land will remain protected forever. In fact, this model of public support is only recommended for landowners strongly engaged with nature conservation ideas, that are clearly interested in the development of active plant conservation.

The second type of subventions is devoted to promote the protagonism of landowners as actors of the plant conservation tasks. Those activities can be supported up to a 100% of their price, depending on the public budgets. On the third kind -support for acquisition of new PMRs-, their amounts and conditions are very similar than those explained for the first type.

After the selection, and a time the landowners have effectively received the payment, their lands are classified as pre-PMRs, and their legal regime is close to the true PMRs. In the case of public PMRs, they are landmarked with very cryptic signals -vertical, tin cars in grey color-; only the PMRs placed in very visited zones or into protected areas are more apparently signalized, in order to avoid the negative effect of public ignorance of the site values. For zones affected by vandalism, an experimental system have been successfully developed, consisting of colourful landmarks -in red- placed 30 or more metres far from the PMR boundaries, but with a legal PMR inscription; people respecting the nature is usually prevented by these landmarks, and they do not damage vegetation; in the case of vandals, they usually destroy or damage the signals, but they do not continue ahead. In fact, these red signals allow to establish an effective buffer zone around the PMRs in risk areas.

The PMRs can be landmarked a year before their legal declaration; this measure allows the preventive protection of the sites. A time landmarked, and joining the legal, botanical and topographical information and the draft of the management plan, the regional plant officers start the administrative procedures of the bill of Order passing new micro-reserves, to be signed by the Councilior of Environment (regional Minister of Environment). The draft of legal rule must be offered to a public consultation, with the active participation of researchers, local conservationists, municipalities; the national authorities belonging to the Water and Coast administrations must be also consulted, in the case of riverine or coastal micro-reserves. After a relatively short procedure (4-5 months) the draft is definitively reported by the lawyers and the central office of the regional service for Biodiversity Conservation and Management, and offered to be signed to the Councilior of Environment.

Following the Decree 218/1994, the plants, soils, water and rocks enclosed into the PMR boundaries are strictly protected, but some traditional, soft extractions can be allowed; in addition, the management plan can recommend or force to develop additional tasks (clearcuts, grazing, etc.). Hunting and grazing are generically allowed, and wild animals are not strictly protected into the PMRs, but the management plan can forbid or limitate any of these activities if they are locally negative for plants.

The Order to pass new PMRs also encloses the management plan -tipically a few paragraphs -.

To declare new PMRs, the officers must take in account some accurated preventions, mainly related to the 'philosophy' of this experience. The PMRs are managed as a coordinated network, in order to be the future frame to develop a big, regional biomonitoring programme, when the endemic and relict species, usually considered as excellent bio-indicators, will be used to monitorize long-term biodiversity changes in the Valencian landscape. So, the programme pursues to protect at least one population for each endemic or relict plant; that is not exactly the same that the protection measures for the most threatened plants (except for those simultaneously being endemic or relict). The legal national and regional frames in nature conservation topics, recommends that the most threatened plants must be declared as protected species, they must be the object of the approval and development of legal recovery plans, and their conservation must be ensured by means of other 'stronger' kinds of protected areas (mainly through Nature Reserves). Thus, the effective protection of the three types of singular plants (rare/relict, endangered, and endemic) can be raised by means of a wise combination of PMRs and Nature Reserves (or other 'major' protected areas as Nature Parks, Natural Monuments, etc.), and none of them can independently give enough protection to the whole group of species. The difference between PMRs and Nature Reserves lays on their legal force; a PMR cannot be established against the will of the landowner, whereas the declaration of a Nature Reserve can start, if necessary, a future expropriation.

## RESULTS AND DISCUSSION

The declaration of plant micro-reserves (PMRs) started by November 1998.; the last Decree passing new micro-reserves have been passed by August 2001. During these three years, 155 micro-reserves, covering 831,0 ha, have been passed. Mean surface is 5,4 ha per micro-reserve, but only a small proportion (48 PMRs, 31%) are over this average. These zones holds 210 endemic species (60% of the regional sum), being distributed through 89 municipalities. Detailed data on the species can be found in LAGUNA (in press, and 2001b)

132 PMRs (85,2%) are placed on public lands whose management depend on the regional administration; the rest (23 PMRs, 14.8%) belong to the private/municipal model. In the last case, 8 are owned by municipalities, 9 by NGOs or conservationist foundations, and 6 by private, individual landowners. These 6 PMRs only occupies 15,9 ha (mean average: 2,6 ha/PMR) so the interest to get easy money thanks to the public aids have not motivated the landowners' applications; after contacting them, three possible reasons to apply for the creation of a PMRs were found:

- the maintenance of a long-term land inheritance without alterations -mainly for landowners whose families have owned the same land for centuries-
- the personal interest to maintain forever untouched sites, mainly for a personal pleasure. This interest have continued, despite the interviews maintained with the landowners, where the plant officers have explained that the land use could not be changed by the inheritors.

All the PMR have some kind of landmarking, except for those placed in very small islands (2 cases in the Nature Reserves of Columbretes Islands). 62 of them have additional elements to inform people, or to canalize the public acces. No PMRs are fenced, except for some very small fenced fragments (typically a few sq m) for research purposes. Plant inventories are made each 4-5 years in the non-disturbed PMRs; census of threatened species are more regular (each 1-2 years) for the species with drafts of recovery plans; in addition, disturbed PMRs –those affected by recent wildfires- are periodically censused. The PMRs held by 1998-2000 reinforcements of some of the most threatened endemic plants at regional level, notably for *Limonium dufourii*, *Limonium riguali*, *Silene hifacensis*, *S. diclinis*, *Salix tarraconensis*, *Antirrhinum pertegasii*, *A. valentinum*, and some very rare taxa (*Marsilea strigosa*, *M. batardae*, *M. quadrifolia*, *Kosteltzka pentacarpa*, *Taxus baccata*, *Juniperus phoenicea* subsp. *turbinata*, *Periploca angustifolia* subsp. *laevigata*)

In a first phase (1998-2001) the PMR programme have been only devoted to generate a network of plots to include one or more populations of each endemic species. It is though that an approximate amount of 250 PMRs could encompass this goal for 95% or more endemic taxa at regional level, and that this aim can be successfully achieved by 2005-2006. By 2001-2002, a new phase is going to be planified, in order to ensure the functional enlargement of the network towards the cryptogammic plants and the marine habitats, and to promote a more active intervention of landowners and municipalities.

The development until today have been ensure thanks to the work of 8-9 plant officers, 6 of them working at the territorial services (mean average: 383.000 ha/officer) and 3 more on the central headquarters (1 director, 1 coordinator and 1 specialist for GIS and databases). The budget reaches 350.000-400.000 EUR/year. Most PMRs do not need any special surveillance and they are regularly vitsited by the forest keepers –they usually fill a sheet on general information of those sites, in order to planify the short-term management (i.e., landmarks replacement, etc)-. However, those PMRs layed on touristic resorts or into the boundaries of Nature Parks, Protected Landscapes, etc., need a more continuous surveillance, provided by the environmental keepers, volunteers, and the same plant officers working for the project.

The lack of important social conflicts must be remarked (see LAGUNA, 2001). The PMRs have become a popular model of protected areas (on the contrary of the traditional protected zones like Nature Parks or Nature Reserves, usually conflictive). The PMRs allows some traditionally problematic uses (hunting, grazing) that can be considered compatible with plant conservation; there are obvious exceptions, but in most cases, these activities are ;not strictly negative for plants (case of hunting practices) ar can be useful for them (i.e., garzing to benefit heliophile endemic plants, needing regular vegetation clearcuts). Simultaneously, the starting point of this model is the possitive will of landowners, that are 'selected' by the public administration: people asking for easy money is quickly scared by the strong conditions of the future conditions that they must accept (irreversible declaration of protected areas, low economic supports, etc.). On the contrary, this model enhance the protagonism of active, local people, engaged with plant conservation; this idea is doublely possitive: it benefits the actors (landowners), but also add the conservationist people to abandon any passive position, usually criticized for the rest of the society. As a result of that, local actors for active conservation become important in their villages or cities, and they act such as new motors to enlarge the ideas of nature conservation.

In other hand, some city councils, mainly placed at inland, mountainous, less favoured areas, have shown their interest to include the micro-reserves into their local frames of eco-development (sustainable development, rural tourism, Agenda 21, etc),

However, the model of PMRs cannot be considered as a magical medicine, or as an alternative solution to protect wild plants or habitats. It only deals with a complementary tool, that must be used in the frame of global policies, combining the declaration of management of big and small areas. In this way, LAGUNA (in press) has shown that most European countries have partial, alternative models to protect small habitats (i.e., UK's SSSIs, Czech and Slovakian Nature Monuments, etc.), but they rarelay are managed as a network, or devoted to active conservation and study. It is a fact that the protection of small, rich-plant (or animal) sites, suggest the establishment of some specific models of protected areas (see GÓMEZ CAMPO, 1981; GÓMEZ CAMPO & HERRANZ, 1993), but the model of Valencian PMRs can encompass this function in a combined use with stronger designations (i.e.,

Nature Reserves, when there is no agreements with the landowners to establish conservation measures).

At this moment, the Valencian PMRs have become a new model particularly useful for Mediterranean plants (AKERROYD, 1998 and 1999; SYNGE, in press), or to be used as an useful tool for territorial planing (PADILLA & RAMÓN, 1997), and several international institutions and programmes have promoted the enlargement of this schema (case of Planta Europa, IUCN's Parks for Life, Spanish programme MaB-UNESCO). However, the future challenges, indeed at the local level in the Valencian Community, are plenty of new questions -i.e., how to stablish a marine PMR?, how many PMRs can be maintained for long-term under the hypothesis of a sustainable budget?...

## AKNOWLEDGEMENTS

The PMR network have been built up thanks to the economical suppor of the European Commission's LIFE programme (not forgetting the continuous work of the EC's LIFE Unit and the CE's external LIFE services for Spain - ATECMA-MECOMAT), and to the participation of a big team of Valencian botanists working as independent professionals or researchers, environmental officeers and forest keepers, whose list can be too large to be shown here. The authors like to express their gratitude to all of them.

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<sup>1</sup> The author have been authorized by the Secretariat of the Council of Europe, to spread draft copies of this report. An available, free copy occupies about 800 Kb, in PDF format. People interested must contact the organization. A free copy of the Decree regulating the Valencian PMRs, translated to English, also is available.



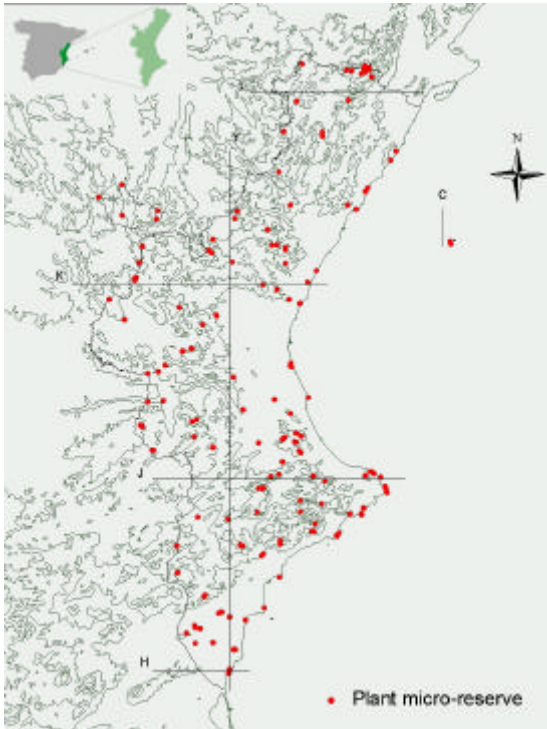


Fig. No. 1. Distribution of the Valencian network of plant micro-reserves, overprinted on the physical regional map.



Fig. #2. Plant micro-reserves landmark



Fig. #3. Typical micro-reserve: Small pond in Sinarcas, Valencia (Spain)



Fig. #4. Cliff at St. Antonio cape, Alacant (Spain). A typical example of high representation of endemic plants in a micro-reserve (more than 20 iberian endemic taxa).



Fig. #5. *Torre Colomera*, Castelló (Valencia). An example of fragmented habitat by urban development.



Fig. #6. *Limonium riguali* recovery in its natural habitat.