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Micro-reserves, consolidated experience from the Valencian Community (Spain)

By Emilio Laguna *

BASIC CHARACTERISTICS OF THE VALENCIAN COMMUNITY AND THE PLANT MICRORESERVE INITIATIVE

In 1991, the author of this article proposed to the Generalitat Valenciana - the autonomous government of the Valencian Community in Spain that a huge network of small protected sites should be created in order to ensure the future study and monitoring of the rich endemic flora within the three Valencian provinces: Castellon, Valencia and Alicante. The Valencian Community is one of the few European regions sharing more than one Centre of Plant Diversity (see Davis *& al*., 1994), due to the geographical convergence of two major mountain systems in Spain: the Iberian-Javalambre mountains and the Betic Cordillera. This region has a very wide range in altitude (0-1832 m.a.s.l.), rainfall (from 200 to 1000 mm/year) and mean annual temperatures (from 8 to 19ºC), as well as an extreme variety of soil and rock types. Much of its territory is dominated by karstic landscapes with alternating mountain peaks and deep gorges, thereby creating excellent conditions for the so-called 'biogeographical islands'. It also houses true islands in the Mediterranean Sea, like the small archipelagoes of Columbretes or Tabarca islands.

The studies on the Valencian botanical richness co-ordinated since 1987 by the author, have shown that its vascular flora is approximately 3150 species of which 350 are Spanish endemic species with 60 of those being exclusive of the Valencian region. However, both Spanish and Valencian policies on nature conservation have been focused on the endangered species, rather neglecting the important role of the non-threatened endemic flora. Remarkable populations of these non-threatened endemic plants should also be safeguarded thereby allowing them to be used both in bio-monitoring studies (i.e., to test climatic change) and as reservoirs of exclusive genetic information.

The study of the endemic plants profile (see Laguna, 1994; 1998)has shown two interesting conclusions: 1) most endemic plants prefer to live outside of the climax and pre-climax vegetation and forming part of microhabitats modulated by hard environmental conditions. In this way, 97% of the Valencian endemic taxa avoid life in true forests or tall shrublands. 2) Harsh micro-environments (rocks, salt lagoons, temporary ponds, etc.) hold plant associations dominated by endemic or very rare and threatened non-endemic plants, so the protection of small sites are able to give a large degree of protection for them. The author proposed to establish a network of 250-300 microsites and to give them a legal status for protection against, for instance, site destruction, but allowing continued low-impact, traditional activities such as grazing, hand-collected fuel extraction, etc. These local activities are necessary to maintain open landscapes where more than a third of the local endemics are living as in the case of scrub heliophytes, fire lilies, etc.

A new perspective: sites to be studied aswell as be protected

The true starting point to build the plant micro-reserves (PMR) network was the EC's approval of a fund aid to the Generalitat Valenciana, during the first call for proposals to the LIFE-Nature programme, in 1992. This was a project between 1993-97, later extended to 1999 that proposed the definition of a first set of 150 microsites - a kind of skeleton of the PMR network, giving them a legal status as protected areas. This condition was achieved thanks to the Decree 217/1994 of the Valencian Government, which created the legal designation of 'Plant Micro-Reserve'. An initial technical proposal showed that the Generalitat Valenciana could establish a quite effective network designating only public sites managed by its Service of Biodiversity Conservation. Furthermore, several landowners with nature conservation interests proposed to add rules to allow the creation of so-called 'private micro-reserves', to be managed by themselves, and partially supported through public funds. This model could also be enlarged to those municipal forests directly managed by the city towns but outside the responsibility of the regional or national governments.

On the other hand, the Spanish and Valencian Laws on Natural Protected Areas foresaw a specific entity for the urgent protection of sites with

Hedera helix L. subsp. *rhizomatifera* MacAllister, an endemic species recently described to central and southern Spain, which shown pure populations in the micro-reserve 'El Caroche'.

Micro-reserve 'Balsa de la Dehesa' (Espadan Mts., province of Castellon), one of the few typical Mediterranean temporary ponds in the Valencian region.

high-natural values, the Nature Reserve. As an alternative, the author proposed that this new entity called the 'Plant Micro-Reserve' could achieve some new targets that were not formerly proposed in the legal framework. The PMR will not be just to protect plants, but also 'to protect the study, conservation and monitoring practices with plants'. This vision opened a new door: to use the PMR network as a long-term observatory on changes in the floristic composition and plant landscape in the region of Valencia, using the populations of endemic, rare or relict plants as bio-indicators.

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How has the PMR Network advanced? Results and new challenges

The procedures to select and to establish PMRs have been explained by Laguna (2001). The legal declaration of the first Valencian PMRs was made by the end of 1997. Since that date, 257 PMRs have been created by the Generalitat Valenciana as legally protected sites, covering 1786 ha. The sites are protected through Orders of the Council of Environment, published in the regional gazette, which incorporates the management plan for each PMR. The management plan designates a few priority plants in each PMR, which are targeted for conservation actions (census, management projects, population reinforcement if required, etc). Only two actions are designated for all the PMRs: census of priority species, and the collection of their seeds to be transferred to the Germplasm Bank of the Botanical Garden of the University of Valencia. More than 1050 populations, belonging to 450 taxa, have been targeted for census and seed collection; however, both actions are still at the starting point for most PMR, so their implementation represents an important challenge for the next years. Each microreserve is landmarked and some of them - those located in the most visited sites, or being object of educational projects - also have explanatory boards for public information. The PMR are not usually fenced, but some of them include experimental fenced plots - e.g., to follow post-fire evolution of the local vegetation.

Forty PMRs follow the 'private' model. Their landowners do not receive periodical subsidies, but they can obtain public funds to compensate up to 80% of the demonstrated cost of conservation activities made or contracted by themselves. There is an association of PMR landowners, including private owners, NGOs and municipalities.

Since its setting up, the PMR network has become a basic resource to develop plant conservation projects on all kind of scientific topics such as population biology, plant diversity and reproductive biology. Simultaneously, the model created interest amongst conservation botanists in other European regions and countries, and pilot projects to create new PMR networks have been developed under the umbrella of LIFE-Nature aid in Slovenia, Crete (Greece) and Menorca (Spain). The Latvian law on Protected Areas 5/2000 created the entity of 'Microreserve' - also enlarged for animals and geological objects, and protects 649 microsites, most of them being of botanical interest. Similar laws have been passed in Spain by the parliaments of Castilla-La Mancha and the Balearic Islands. Finally, the Valencian PMR initiative has been adopted as a pilot project by Planta Europa, the Bern Convention, the LIFE-Nature programme and the MaB-UNESCO programme.

Davis S.D., Heywood, V.H. & Hamilton, A.C. (eds) 1994. Centres of Plant Diveristy: A guide and strategy for their conservation. Vol. 1: Europe, Africa, South West Asia and the Middle East. 578 pp. WWF and IUCN Publications Unit. Cambridge, UK.

Laguna, E. 1994. Introducción. In Aguilella, A. et al. (eds): Flora vascular rara, endémica o amenazada de la Comunidad Valenciana: 13-27. Generalitat Valenciana, Valencia, Spain [In Spanish]

Laguna, E. 1998. The Plant Micro-Reserves Programme in the Region of Valencia, Spain. In Synge, H. & Akeroyd, J. (eds): 181-186. Plantlife and The Swedish Threatened Species Unit. London and Uppsala.

Laguna, E. 2001. The micro-reserves as a tool for conservation of threatened plants in Europe. 119 pp. Nature and Environment series nº 121. Council of Europe. Strasbourg.

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