Conservation through plant micro-reserves: Experiences from the LIFE programme

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THE PLANT MICRORESERVE (PMR) INITIATIVE

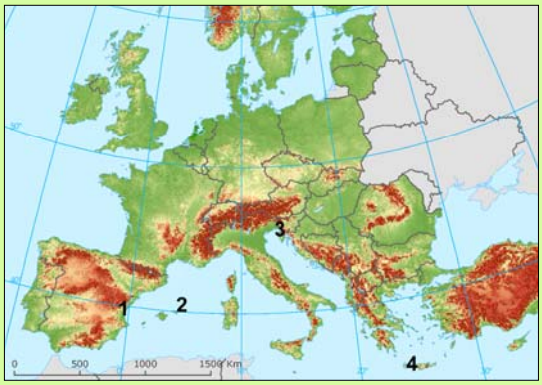
The initiative to protect small sites holding representative examples of wild plant diversity was first launched in 1990 (LAGUNA, 1991, 2001) in the Valencian Community (Spain), owing to the fact that endemic and endangered species often concentrate their populations in small or fragmented microhabitats (rocky outcrops, salt laden soils, temporary ponds, etc.). A technical concept of Plant Micro-reserve (PMR) has been established through several publications: LAGUNA (2001, 2005), DELTORO & al. (2006). PMR can be defined as small sites (tipically up to 20-50 ha) holding good samples of singular species or habitats, where plants/fungi are protected from removal or destruction -but traditional activities benefiting them are allowed-, which are legally protected in order to ensure monitoring and active conservation practices.

-DELTORO, V., J. PÉREZ-BOTELLA, L. SERRA, P. PÉREZ-ROVIRA, A. OLIVARES, S. FOS, G. BALLESTER & E. LAGUNA. 2006. Plant Microreserves: frequently asked questions. In AGUILELLA, A., A.M. IBARS, E. LAGUNA & B. PÉREZ (eds.): *Proceedings of the 4th European Conference on the Conservation of Wild Plants*. CD-ROM. Generalitat Valenciana & Universitat de València. Valencia

-LAGUNA, E. 1991. Los recursos de flora y fauna silvestres. Chapter I.13, pp. 237-248 in HONRUBIA, J. (coord.): *Proyecto 93: La Comunidad Valenciana en la Europa Unida. Vol. I: Nivel de vida, Medio Ambiente y Ordenación del Territorio*. Presidència de la Generalitat Valenciana. Valencia [In Spanish]

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

-LAGUNA, E. 2005. Plant microreserves: Concept and development. pp. 31-32 (Spanish), 91-92 (Slovenian) and 141-142 (English) in LAGUNA, E., V. DELTORO, B. LIPEJ, M. KALIGARIC & A. SOVINC (eds.): *Diversity and conservation of karst landscapes: Valencian and Slovenian examples*. 168 pp. Conselleria de Territori i Habitatge, Generalitat Valenciana. Valencia.



European area where the PMR initiative has been launched thanks to the LIFE-Nature programme (see boxes). 1: Valencian Community, Spain; 2: Minorca, Balearic Island, Spain; 3: Karst Edge, Slovenian Karst Regional Park, Slovenia; 4: Prefecture of Chania, Crete, Greece.

Above: Signpost of a Valencian PMR. Below: 'Lavajo de Abajo' (Sinarcas, Valencia), one of the most celebrated Valencian PMRs, protecting the most important Mediterranean temporary pond in Eastern Spain

1: VALENCIA'S PIONEERING EXPERIENCE

-1994-1999: LIFE93 NAT/E/000766 'Creation of a network of plant micro-reserves in the Valencian Community (Spain)' [=LIFE93 NAT/E/011100 + LIFE95 NAT/E/000856]

-1999-2003: LIFE99 NAT/E/006417 'Conservation of priority habitats in the Valencian Community'

The LIFE-Nature funds supported the establishment of a pre-network of 150 sites by 1994-1999, which before the end of 2003 had grown to 190 sites. In 1994, the Valencian Government passed the legal figure of Plant Microreserve. Currently, the Valencian Community holds 259 legally protected PMRs (the densest network of protected sites for plant conservation in the World), confering protection to populations of 1505 species (50% of the regional diversity), including 270 Spanish edemics (77% of the endemic species present in the region).

-LAGUNA, E. 1999. The plant micro-reserves programme in the region of Valencia, Spain. pp 181-185 in SYNGE, H. & J. AKEROYD (eds.): *Proceedings Planta Europa 1998, Second European Conference on the Conservation of Wild Plants*. The Swedish Threatened Species Unit and Plantlife. Uppsala & London

-LAGUNA, E. 2004. The plant micro-reserve initiative in the Valencian Community (Spain) and its use to conserve populations of crop wild relatives. *Crop Wild Relative*, 2: 10-13.

Blogs: http://microreserve.blogspot.com (in English) ; microreserves.blogspot.com (Valencian/Spanish)
Website: http://es.geocities.com/microreserves

2: PMR IN THE BALEARIC ISLANDS: A PROPOSAL FROM MINORCA

2001-2004: LIFE00 NAT/E/007355 'Conservation of areas with threatened plant species in Minorca (Spain)'

The government of Minorca (Consell Insular)developed a set of comprehensive actions to recover the plant species and piority habitats protected by Directive 92/43/CEE, including the drafting of a network of 24 PMRs. By 2005, the regional government (Govern Balear) passed the new Law on Natural Protected Areas, which includes the statutory figure of 'Microreserve'. The authorities and technical staff of both governments study now how to actually implement this network of protected microsites.

-FRAGA, P. (coord.) 2005. *Proposta de microreserves de flora* (In Catalonian language). Consell Insular de Menorca. Maó. http://www.cime.es/lifeflora/descargas/microreservas.pdf

Website: http://www.cime.es/lifeflora/uk/portada.asp

Members of the scientifical advisor committee of the Minorcan LIFE-Nature projects visit the proposed micro-reserve 'Bassa de Torre Llafuda' (approx. 0,5 ha), guided by the project coordinator Pere Fraga

3: EXPORTING THE MODEL TO SLOVENIA

2002-2005: LIFE02 NAT/SLO/008587 'Conservation of endangered species/habitats in the future Karst Park (Slovenia)'

The goal of project LIFE-Nature carried out by the Science and Research Centre (ZRS) at Koper (University of Primorska) was to set up a network of 30 microreserves for rare and endangered wild plants, as well as for priority habitats protected by the Directive 92/43/CEE, mainly focused on small ponds, calcareous screes, rocky slopes and grasslands. All the sites are within the boundaries of the Karst Edge, to be included in the future Regional Park of the Slovenian Karst.

-KALIGARIC, M., B. SURINA, K. POBOLJSAJ, F. REBEUSEK, B. LIPEJ & N. REZEK DONEV. 2005. Microreserves proposal at Karst Edge. Pp 64-67 (Spanish), 124-127 (Slovenian) and 157-160 (English) in LAGUNA, E., V.I. DELTORO, B. LIPEJ, M. KALIGARIC & A. SOVINC (eds.): *Diversity and conservation of karst landscapes: Valencian and Slovenian examples*. Conselleria de Territori i Habitatge, Generalitat Valenciana. Valencia

-LAGUNA, E., V. DELTORO, L. SERRA & P. PÉREZ-ROVIRA. 2006. Taking microreserves from Spain to Slovenia". *Plant Talk* 43: 18-22.

Webpage: http://www.zrs-kp.si/projekti/life/index_a.html

Above: Experts of the Valencian and Slovenian teams discuss at the office of the Science and Research Centre (ZRS) in Koper the excursion to visit several proposed PMRs in the Karst Edge. Below: Dr Mitja Kaligaric and Bojana Lipej (ZRS) explain the interest of the local vegetation to Dr. Vicente I. Deltoro (at left), representative of the Valencian PMR team, in a future PMR holding the threatened *Serratula lycopifolia*, near Rakitovek (Slovenia).

4: A FOCUS ON HABITAT'S DIRECTIVE SPECIES: THE PMR NETWORK IN WESTERN CRETE (GREECE)

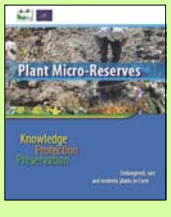
2004-2008: LIFE04 NAT/GR/000104 'A pilot network of plant micro-reserves in Western Crete (Greece)'

The goal of the LIFE-Nature project CRETAPLANT developed by the MAICh (Mediterranian Agronomic Institute of Chania) and NKUA (National and Kapodistrian University of Athens) is to adapt to the province of Chania (Western Crete) the PMR model, so as to fit the needs of protecion of 6 species listed in Annex II of Habitats Directive and 1 priority habitat site -for *Phoenix theophrastii* palm groves-. The 7 PMRs are found within Natura 2000 sites - and thus enjoy a basic protection level-, MAICh and NKUA contacted the regional and national authorities in order to give them a more specific protection.

-THANOS, C., Ch. FOURNARAKI & P. GOTSIOU. 2006. *Plant micro-reserves. Knowlede, protection, pereservation. Endangered, rare and endemic plants in Crete*. NKUA, MAICh and the Forest Directorate of Chania. Chania, Crete.

Website: http://cretaplant.biol.uoa.gr/

Above: Visiting the proposed PMR of Elafonisi island (Crete), Dr Costas Thanos and his collaborators explain monitoring practices to the representatives of LIFE teams from Valencia and Minorca, as well as to Dr Costas Kadis -from the Research Promotion Foundation, Nicosia, Cyprus-, interested to the exportation of the PMR model to Cyprus-.



Right: Cover of the booklet on the PMRs proposal for Western Creta, edited in the framework of the LIFE-Cretaplant project (see reference: Thanos & al., 2006)

Representatives from all the teams, as well as experts and guests of the LIFE-Cretaplant project, during the 1st International Workshop on PMRs organized in the Mediterranean Agronomic Institute of Chania (MAICh), November 2005, coordinated by Dr Costas Thanos.

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