1st European Congress of Conservation Biology
22 – 26 August 2006 – Eger, Hungary

Elaboration of Monitoring Plans for Protected Plant Species of Western Crete, Greece

C. A. Thanos[1], P. Dimopoulos[2], E. Bergmeier[3], K. Georghiou[1]

[1]Department of Botany, National & Kapodistrian University of Athens, Athens, Greece,
[2]Lab. of Ecology and Biodiversity Conservation, Dept. of Environmental and Natural Resources Management, University of Ioannina, Agrinio, Greece,
[3]Dept. Vegetation & Phytodiversity Analysis, Albrecht-von-Haller Institute for Plant Sciences, University of Goettingen, Goettingen, Germany

Objective

Within the framework of the LIFE-NATURE-2004 project *A Pilot Network of Plant Micro-Reserves in Western Crete (Chania Prefecture)*, monitoring plans have been elaborated for the Annex II (Directive 92/43/EEC) priority plant species *Androcymbium rechingeri*, *Anthemis glaberrima*, *Bupleurum kakiskalae*, *Cephalanthera cucullata*, *Hypericum aciferum*, *Nepeta sphaciotica* and the priority habitat type 9370, *Palm groves of Phoenix*. Monitoring is currently taking place within the boundaries of the respective 7 micro-reserves (Fig. 1), already established in the field (in 3 pSCIs).

Monitoring Plans

The stages of the elaboration of the plans have been: a) collection of existing information on the species' biology, taxonomy, distribution and habitats; b) preparatory field work aiming to improve knowledge on species life cycle, phenology, population size, distribution pattern, habitat and threats; and c) compilation of plan. The monitoring plans include: a) summary of each species' biology, detailed population, growth and reproduction data, description of habitat and threats and assessment of its conservation status (new IUCN categories); b) establishment of monitoring rationale, methods and parameters; c) guidelines for the establishment of permanent plots and meteorological dataloggers, in each micro-reserve, for long-term monitoring and d) instructions for parameter estimation and analysis of results.

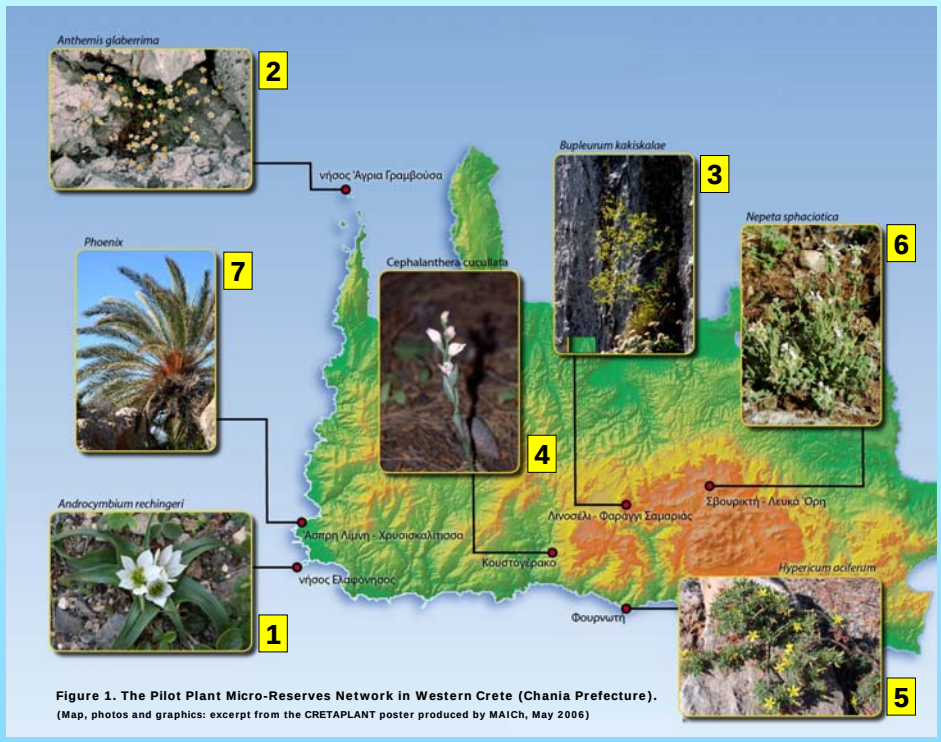

Figure 1. The Pilot Plant Micro-Reserves Network in Western Crete (Chania Prefecture).
(Map, photos and graphics: excerpt from the CRETAPLANT poster produced by MAICh, May 2006)

Selected Results

1 The population trends of the winter-flowering geophyte *Androcymbium rechingeri* are being monitored within 5 permanent plots (Fig. 4) and 2 transects (Fig. 2) while meteo microstations with various sensors have been established in each of the 7 PMRs (Fig. 3). An average density (±SE) of 2.98±0.26 and 2.22±0.28 flowering and vegetative plants, respectively, per 0.04 m² subplots, have been recorded (n=125). 2 Twenty permanent plots (in 3 different microhabitat types) were established to monitor the density and regenerative capacity of the annual daisy *Anthemis glaberrima* (Fig. 7). An average number (±SE) of 13.6±2.2 plants per plot (n=20) with 8.2±0.5 flowering heads per plant (n=271) have been recorded. 3 The seedling establishment of the monocarpic *Bupleurum kakiskalae*, an 'obligate', stenoendemic chasmophyte, is being monitored within a fenced enclosure (that excludes grazing by ruminants) at the base of its vertical habitat (Fig. 8). 4 The total population of the erratically flowering orchid *Cephalanthera cuculata* was counted in the spring of 2006 within the respective PMR: a total of 92 flowering stems and 30 grazed ones were recorded. For the protection against grazing (probably by hares, Fig. 9 left) 15 small enclosures (containing a total of 33 flowering stems) were established (Fig. 9 right). 5 The population trends of the maritime chasmophyte *Hypericum aciferum* are being monitored within 15 permanent plots, 1 X 1 m (Fig. 6) on a total of 45 plants (3.0±0.2 plants per m²). 6 *Nepeta sphaciotica* is a stenoendemic labiate subshrub, growing in a single population on a scree area near the summit Svourichti of Lefka Ori (2230-2350 m asl). As implied by the temperature data collected, the snow cover period extends over 5-6 months annually (Fig. 10); the growing season is restricted between May and November while seed germination and recruitment of new seedlings occurs early after snowmelt. 7 The PMR of the Palm grove of *Phoenix theophrasti* at Aspri Limni, near the Chryssoskalitissa Monastery, includes 42 mature palms (average height 2.6±0.1 m, range 1.1-4.6 m); 41 of them have been identified as male and only 1 was found to bear female flowers (Fig. 5) – the latter one was hand-pollinated in the spring of 2006.


Figure 2. A 20 X 1 m monitoring transect at the *Androcymbium* PMR


Figure 3. The establishment of the first, meteo station at the *Androcymbium* PMR

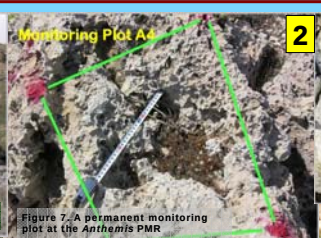

Figure 7. A permanent monitoring plot at the *Anthemis* PMR

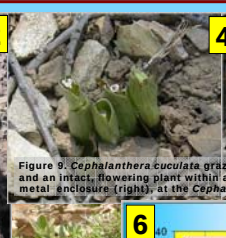


Figure 9. *Cephalanthera cuculata* grazed stems (left) and an intact, flowering plant within a protective metal enclosure (right), at the *Cephalanthera* PMR

Figure 4. A permanent monitoring plot (1 X 1 m) at the *Androcymbium* PMR

Figure 6. A permanent monitoring plot (1 X 1 m) at the *Hypericum* PMR

Figure 8. *Bupleurum kakiskalae* young plants (arrows); nursed but, at the same time, almost overtopped by shrubs, within a fenced enclosure, at the *Bupleurum* PMR

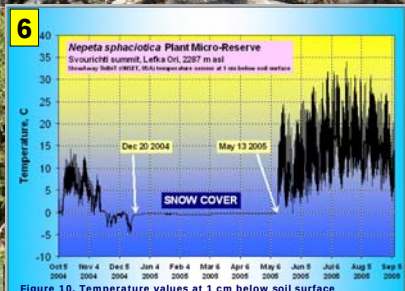

Figure 10. Temperature values at 1 cm below soil surface (the presumed seed germination depth), in the *Nepeta* PMR

Figure 5. Female and male *Phoenix theophrasti* flowers (left and right, respectively) at the Phoenix PMR

CRETAPLANT - *A Pilot Network of Plant Micro-Reserves in Western Crete* (LIFE04NAT_GR_000104); 1-SEP-2004 to 31-DEC-2007
Beneficiary: National and Kapodistrian University of Athens; Partners: MAICh (Chania, Crete) & Region of Crete, Forest Directorate of Chania
Further information: http://cretaplant.biol.uoa.gr and cthanos@biol.uoa.gr