



4th Mediterranean Plant  
Conservation Week

VALÈNCIA | 23-27 OCTOBER | 2023



UNIVERSITY OF  
**ΠΑΤΡΑΣ**  
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ



## Establishment of a Plant Micro-Reserve Network within the responsibility areas of the Management Unit of Chelmos - Vouraikos National Park and Protected areas of Northern Peloponnese (Greece).

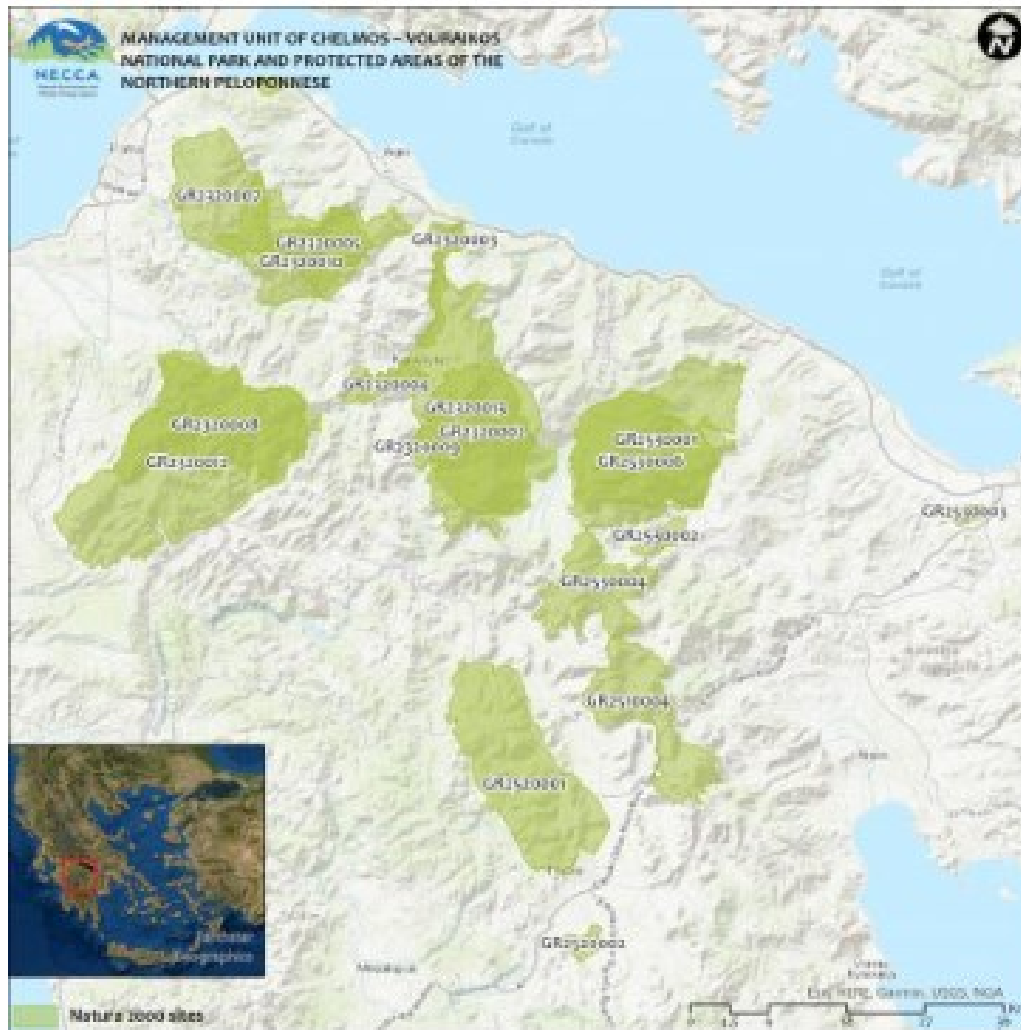
Panitsa, M.<sup>1\*</sup>, Trigas, P.<sup>2</sup>, Kokkoris, I.P.<sup>1</sup>, Kougioumoutzis, K.<sup>1</sup>, Tsakiri, M.<sup>1</sup>, Koumoutsou, E.<sup>1,3</sup>, Topouzidis, N.<sup>3</sup>, Bertsouklis, K.<sup>2</sup>, Tzanoudakis D.<sup>1</sup> & Iatrou, G.<sup>1</sup>

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3 Management Unit of Chelmos – Vouraikos National Park & Protected Areas of North Peloponnese





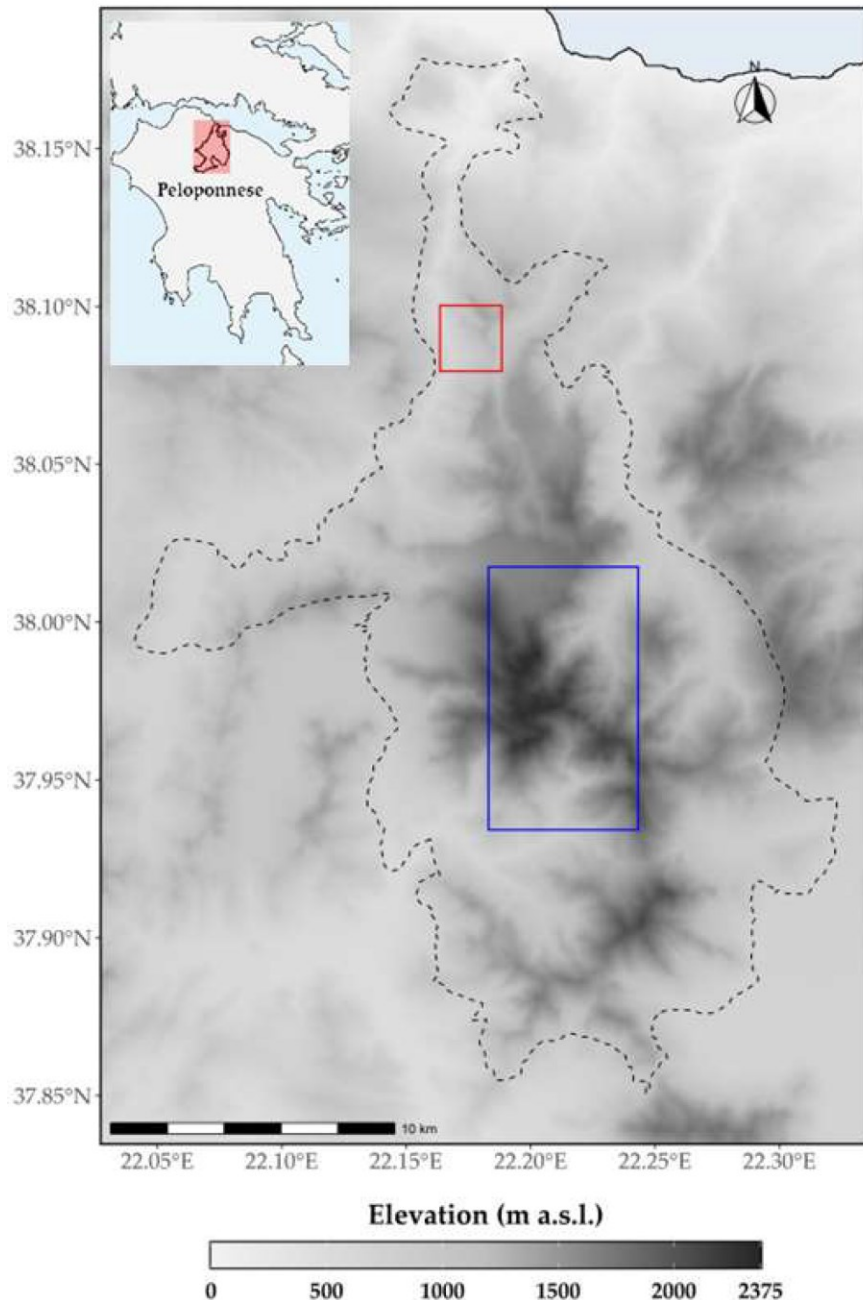
The Management Unit of Chelmos - Vouraikos National Park and Protected areas of Northern Peloponnese is responsible for the conservation of species and habitats of eighteen protected areas that are characterized by especially high floristic diversity and endemism.



A high number of Peloponnesian endemic plants exists especially at the Mts Chelmos and Killini.

Six single mountain endemics, five on Mt Chelmos and one on Mt Killini were selected for the establishment of the Plant Micro-Reserves (PMRs).





## Chelmos Mountain National Park and UNESCO World Geopark

- ✓ a floristic diversity and endemism hotspot in Greece and
- ✓ one of the main areas where Greek endemic taxa, assessed as critically endangered and threatened under the IUCN Criteria A and B, are mostly concentrated.
  
- ✓ High floristic diversity -1467 native taxa and 46% of the Peloponnesian flora,
- ✓ High endemism -177 Greek endemic taxa of which 41 Peloponnesian
- ✓ Single mountain endemic taxa,  
*Silene conglomeratica*, *Alchemilla aroanica*, *Lonicera alpigena* subsp. *hellenica*, *Polygala subuniflora*, and *Valeriana crinii* subsp. *crinii*.

Plant Micro-Reserve Network within the responsibility areas of the Management Unit of Chelmos - Vouraikos National Park (Greece).



Local endemic taxa in the Natura 2000 sites of Chelmos-Vouraikos & Mt Killini

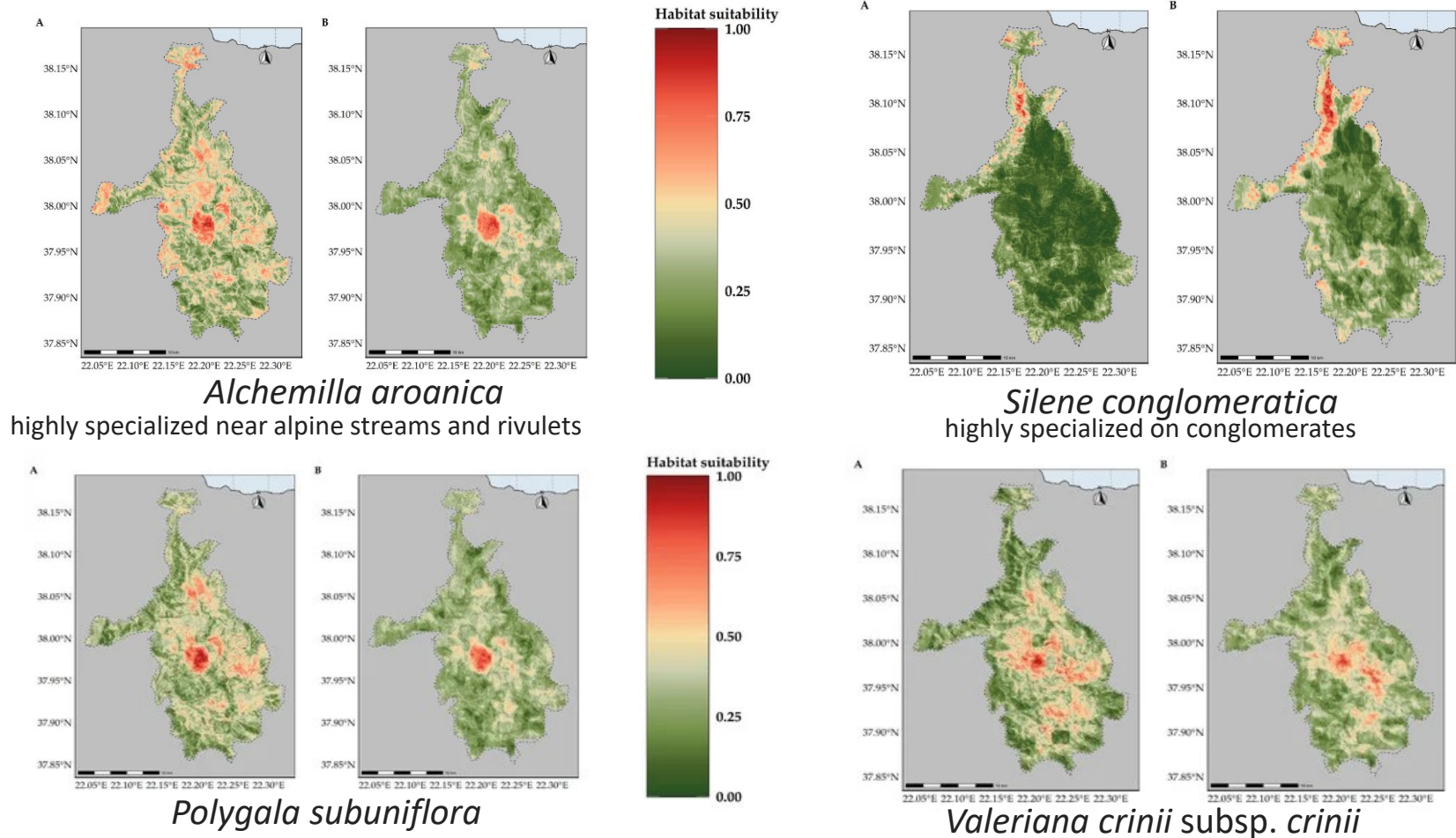


Taxon	Lf	Habitat	Individuals	Elevation (m)
<i>Alchemilla aroanica</i>	He	A C	750	1900-2000
<i>Lonicera alpigena subsp. hellenica</i>	P	W	40	1650-1700
<i>Polygala subuniflora</i>	He	H	250	2000-2300
<i>Silene conglomeratica</i>	C	C	200	800-900
<i>Valeriana crinii subsp. crinii</i>	He	C	320	1200-2000
<i>Veronica contandriopouli</i>	C	H	38	2100-2300



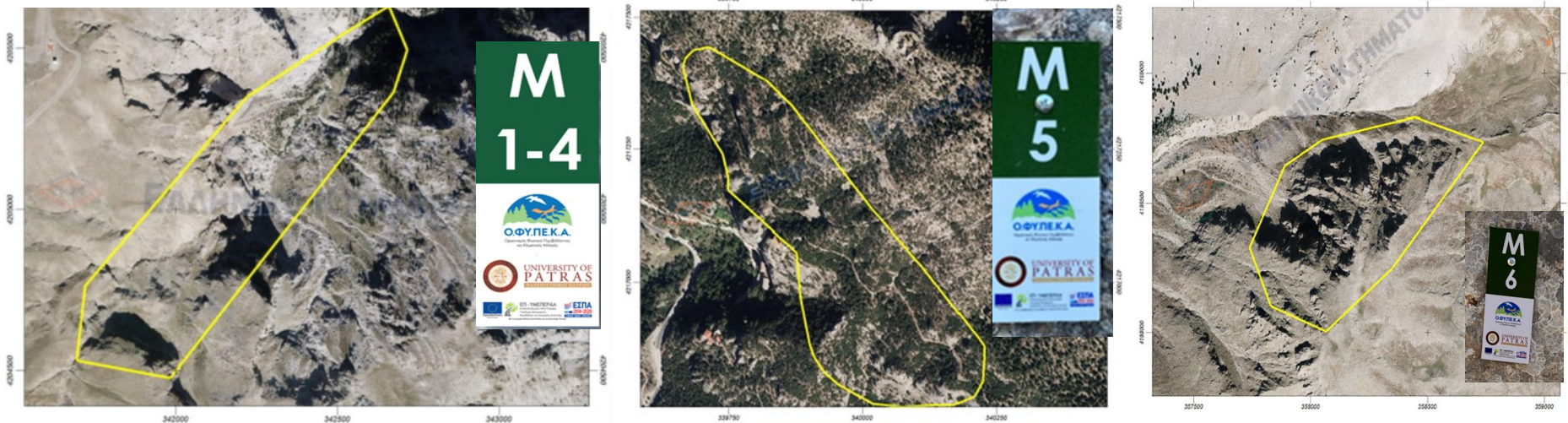


## Habitat suitability under the (A) CC model and (B) CC-LUCCC model.



Most of the taxa analyzed are expected to continue to be considered as **critically endangered** based on both Criteria A and B under all climate change, land-cover/land-use scenarios, and time-period combinations, while *Alchemilla aroanica* and *Silene conglomeratica*, are projected to become extinct in most future climate change scenarios.

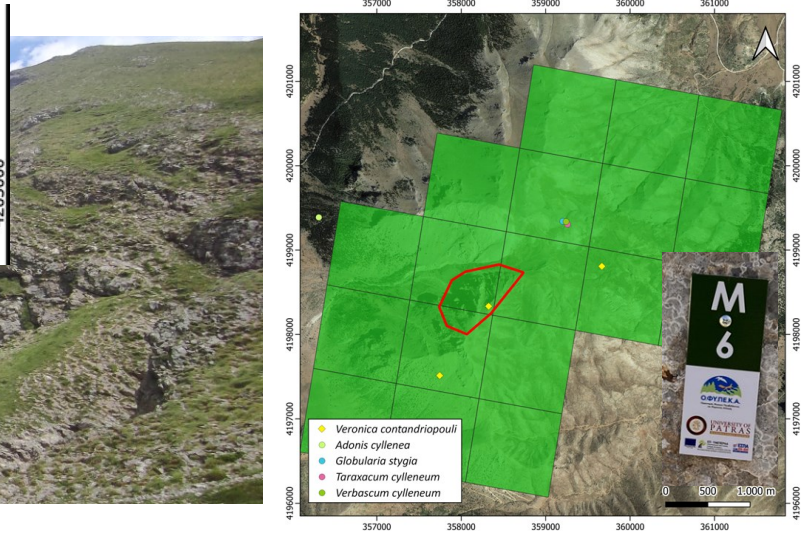
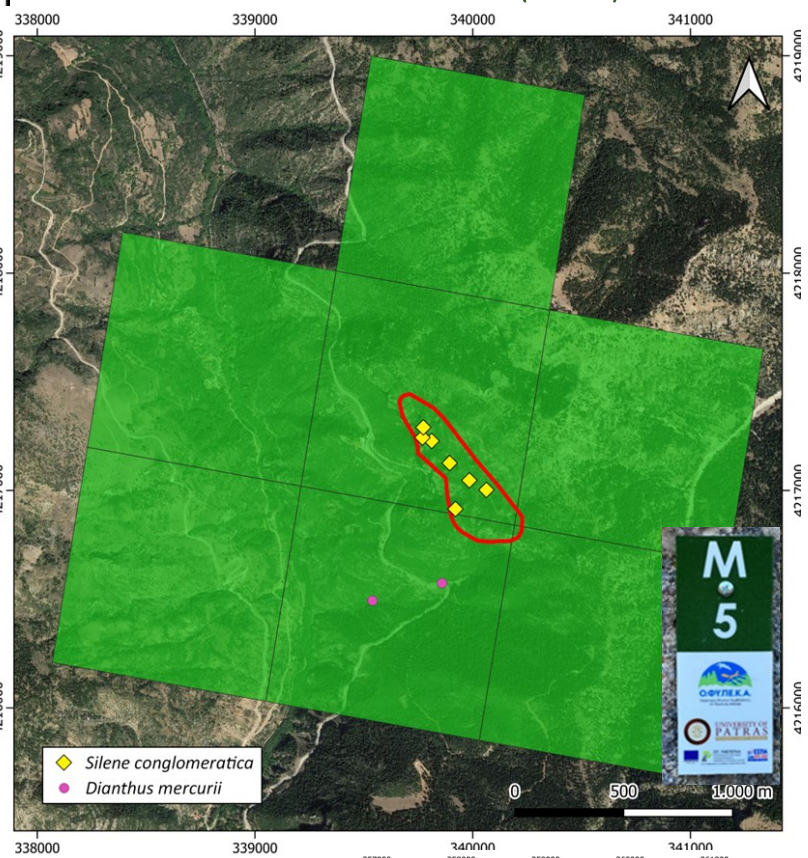
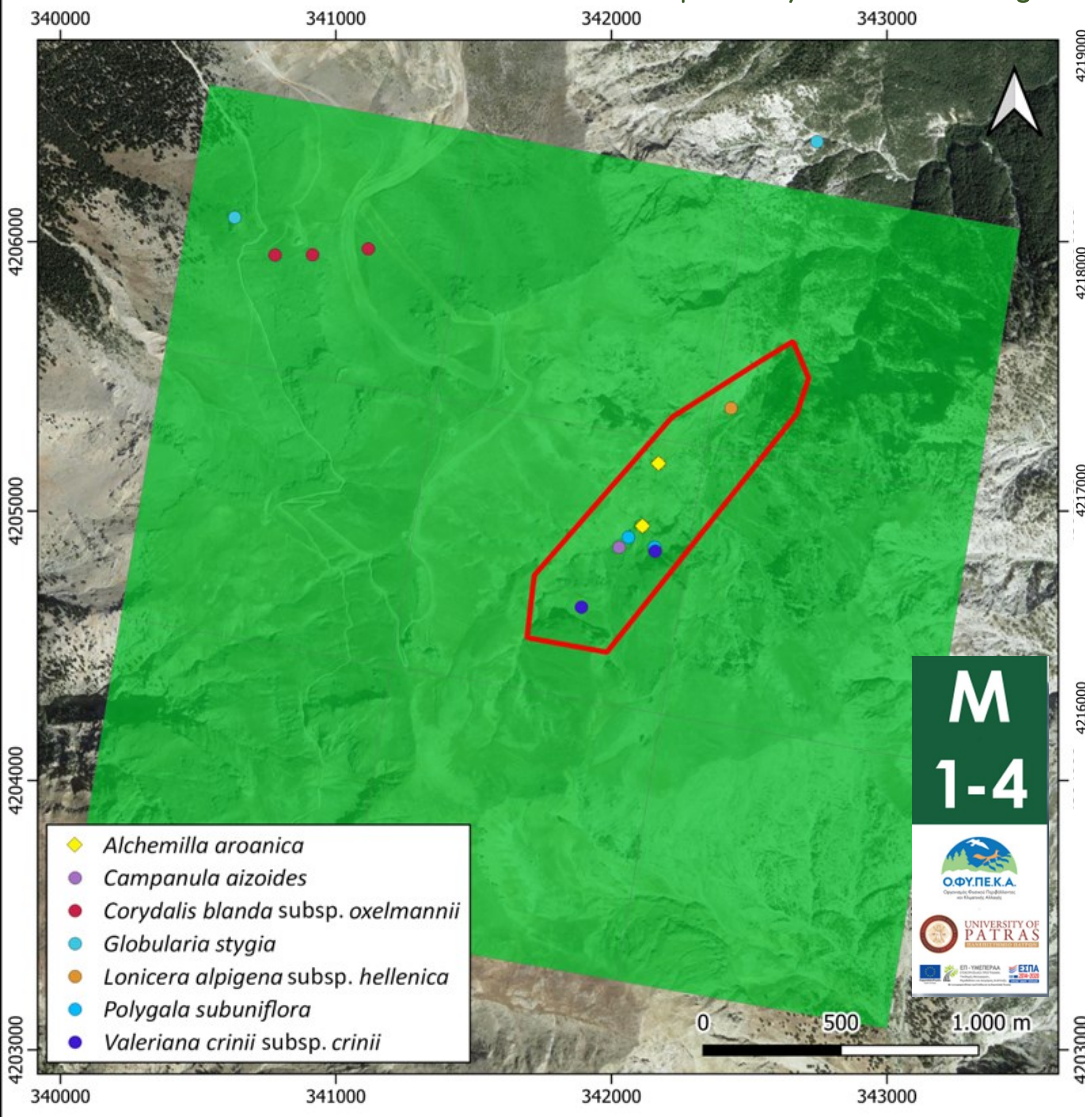
- ✓ The plant micro-reserve (PMR) concept of a less than 20 ha surface protected area aims to protect the main subpopulations of rare endemic taxa through the establishment of a continuous monitoring system and
- ✓ It is a complementary tool to preserve biodiversity in larger protected areas.
- ✓ It is crucial to identify target plant taxa for which monitoring, and conservation are urgent through “regional responsibility” criteria



- ✓ **October 2022: Establishment of a Plant micro-reserve (PMR) network on public land, within Chelmos-Vouraikos National Park**
- ✓ **the first PMR network on the Greek mainland,**
- ✓ based on previous efforts, experience and outcomes concerning PMRs in Spain, Slovenia, Bulgaria, Cyprus, Greece (on the island of Crete), Italy, and Lebanon.
- ✓ A designed PMR network includes, among others, populations of local endemic and rare plants, restricted to extremely small areas.



Plant Micro-Reserve Network within the responsibility areas of the Management Unit of Chelmos - Vouraikos National Park (Greece).





## In-situ conservation and monitoring actions include:

- ✓ Annual monitoring of population and habitat type conservation status and counting of flowering individuals to monitor population variation
- ✓ Placement of information signs
- ✓ Recording of climatic parameters
- ✓ small-scale modification of the relief of the area to reduce erosion and strengthen plant protection.
- ✓ removal of dried, flammable biomass to deal with any fire
- ✓ moderate water supply in extreme drought conditions, when deemed necessary
- ✓ Dispersal of the seeds of the target taxa, in specially designed new positions and in existing positions within the PMR
- ✓ Planting of seedlings of the target taxa produced in the laboratory, from seeds and cuttings of young shoots collected in the PMR, in selected locations.

## Ex-situ conservation actions include:

- ✓ the production of seedlings from seeds and cuttings of young shoots collected from the PMR of each target taxon and their installation in the Botanical Garden of the Department of Biology of the University of Patras and
- ✓ the preservation of seeds in the Department of Biology of the University of Patras







## *Silene conglomeratica*

- ✓ Taxon specialized to conglomerates
- ✓ Distributed only on conglomerates in the area around Mega Spilaio Monastery, designated as a geosite due to their special combined geological, natural and cultural value.
- ✓ The study of the special geological characteristics of is closely linked to protection efforts
- ✓ A unique example of the self-evident relationship between biodiversity and geodiversity



# Plant Micro-Reserve Network within the responsibility areas of the Management Unit of Chelmos - Vouraikos National Park (Greece)

ΜΙΚΡΟ – ΑΠΟΘΕΜΑ  
 MICRO-RESERVE

*Valeriana crinii* Boiss. subsp. *crinii*

GR2320002: «ΟΡΟΣ ΧΕΛΜΟΣ & ΎΑΤΑ ΣΤΥΓΟΣ»

Προστατεύοντας το Μικρο-Απόθεμα συμβάλλουμε στη διατήρηση του είδους και της σπάνιας βιοποικιλότητας της περιοχής.

- ✓ Τοπικό ενδημικό φυτό, συλλέχθηκε πρώτη φορά από τον Θεόδωρο Ορφανίδη το 1852 από το φαράγγι της Στύγας και περιγράφηκε το 1856.
- ✓ Αναπτύσσεται σε σχισμές ασβεστολιθικών βράχων και σάρες, σε σκιερές και με υγρασία θέσεις, σε ασβεστολιθικό υπόστρωμα και σε υψόμετρο 1200-2300 μ.
- ✓ Η αποκλειστικά τοπική εμφάνισή του πληθυσμού στην περιοχή, που μπορεί να επηρεαστεί σημαντικά κυρίως λόγω της επίδρασης της κλιματικής αλλαγής, επιβάλει τον καθορισμό μέτρων προστασίας και διαφύλαξης του πληθυσμού.

**Πέσεις:** βόσκηση, διάβρωση, συλλογή ατόμων

Σημά ορίων Μικρο-αποθεμάτων  
 Micro-reserve borderline signs

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ΜΙΚΡΟ – ΑΠΟΘΕΜΑ  
 MICRO-RESERVE

*Silene conglomeratica* Melzh.

GR2320002: «ΟΡΟΣ ΧΕΛΜΟΣ & ΎΑΤΑ ΣΤΥΓΟΣ»

Προστατεύοντας το Μικρο-Απόθεμα συμβάλλουμε στη διατήρηση του είδους και της σπάνιας βιοποικιλότητας της περιοχής.

- ✓ Αποκλειστικό τοπικό ενδημικό είδος, Πολυετές, χαιμάφυτο. Είναι τυπικό χαμοφύτο και αναπτύσσεται σε βράχους με κροκαλοπαγή πετρώματα, ασβεστολιθική σύσταση, σε υψόμετρο 800-900μ.
- ✓ Το εξαιρετικά σπάνιο αυτό είδος περιγράφηκε το 1983 και δεν εντάσσεται μέχρι τώρα σε κάποιο καθεστώς προστασίας.
- ✓ Η αποκλειστική εμφάνισή του είδους σε κροκαλοπαγή πετρώματα, η εξαιρετικά χημική φτωχικότητα των σπερμάτων του είδους και η επίδραση της κλιματικής αλλαγής, επιβάλουν τον καθορισμό μέτρων προστασίας και διαφύλαξης του πληθυσμού.
- ✓ **Πέσεις:** διάβρωση, βόσκηση και συλλογή ατόμων του είδους

Σημά ορίων Μικρο-αποθεμάτων  
 Micro-reserve borderline signs

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- ✓ Conservation strategies are needed for the protection of rare and threatened plant species.
- ✓ Among all others, one of the main aims is to inform residents and the many thousands of visitors – tourists coming to the area for tourism activities, as skiing at Kalavryta Ski Center, and Hiking-Cycling.

Thank you for your attention