Plant Micro-Reserves

Knowledge
Protection
Preservation

Endangered, rare
and endemic plants in Crete

A Pilot Network of Plant Micro-Reserves in Western Crete

Did you know?

1734 different plants have been recorded in Crete.

10% of these are native only to Crete and nowhere else in the world (endemic to Crete).

66 native plants of Crete are considered as threatened species and are included in the Red Data Book of Rare and Threatened Plants of Greece.

183 native plants of Crete are protected by Greek legislation (Presidential Decree 67/81).

23 native plants of Crete are protected by the Bern Convention.

14 native plants of Crete are protected by the European Directive 92/43/EEC (Habitats Directive) and 8 of these are considered to be of priority for protection purposes.

Plant Micro-Reserves

The European Union finances, through LIFE-Nature programmes, activities for the protection of plants and habitats that are included in the "Habitats Directive".

The University of Athens in collaboration with the Mediterranean Agronomic Institute of Chania (MAICh) and the Region of Crete-Forest Directorate of Chania are currently implementing a LIFE-Nature project named "CRETAPLANT-A pilot network of "Plant Micro-Reserves" in Western Crete". The main objective of this project is the protection of 6 threatened Cretan endemic plants and of 1 habitat. This aim can be achieved through the establishment of a network of Plant Micro-Reserves.

Plant Micro-Reserves (PMR) constitute areas of small extent (less than 20ha) that have been selected because they are hosts of rare and threatened plants.

The concept of "Micro-Reserve" was developed around 1990, in the region of Valencia, Spain, and was applied for the first time in 1994. Such a network of small, protected areas, constitutes a management tool that is complementary to the widely accepted strategy of "large areas" which has been adopted and implemented through the network NATURA 2000.

The protection of the selected plant species within the PMR is undertaken with the implementation of mild managerial measures (fencing, wardening, informative signs etc.) and long-term monitoring, in order to determine the factors that affect their conservation (climate, soil, other plants, animals, human activities, etc.).

In Greece, the concept of "Plant Micro-Reserves" is being applied for the first time as a pilot project in Western Crete. Therefore, if this project is successful, it could be widely applied in other areas of Crete and of mainland Greece.

Androcymbium rechingeri

Did you know?

✓ *Androcymbium rechingeri* grows in small coastal areas of Western Crete (islet Imeri Gramvousa, Falassarna and islet Elafonisi) and nowhere else in the world.

✓ It was first identified in 1967 by the Swiss botanist Werner Greuter.

✓ It is a small bulbous plant, up to 7 cm high and rarely surpasses 10 cm, with leaves up to 15 cm long.

✓ It flowers from December to February. Each plant has more than 4 white flowers and usually has pinkish veins. The seeds mature inside the capsules and the overground plant parts dry up at the end of May or beginning of June.

✓ It is protected by the Greek Presidential Decree 67/81 and the Bern Convention, and is included in the Annexes II* and IV of the Habitats Directive. It is an endangered species, according to the Red Data Book of Rare and Threatened Plants of Greece, because its populations have been badly affected and have taken on tremendous detrimental pressures attributed to various touristic activities.

✓ In the framework of the CRETAPLANT project, the Micro-reserve of the plant has been created in an area of 2 hectares on the Elafonisi islet, in the southwestern area of Crete.

Anthemis glaberrima

Did you know?

✓ The plant species *Anthemis glaberrima* grows among calcareous coastal rocks on the islets of Imeri and Agria Gramvousa and nowhere else in the world. These islets are located along the NW corner of Crete.

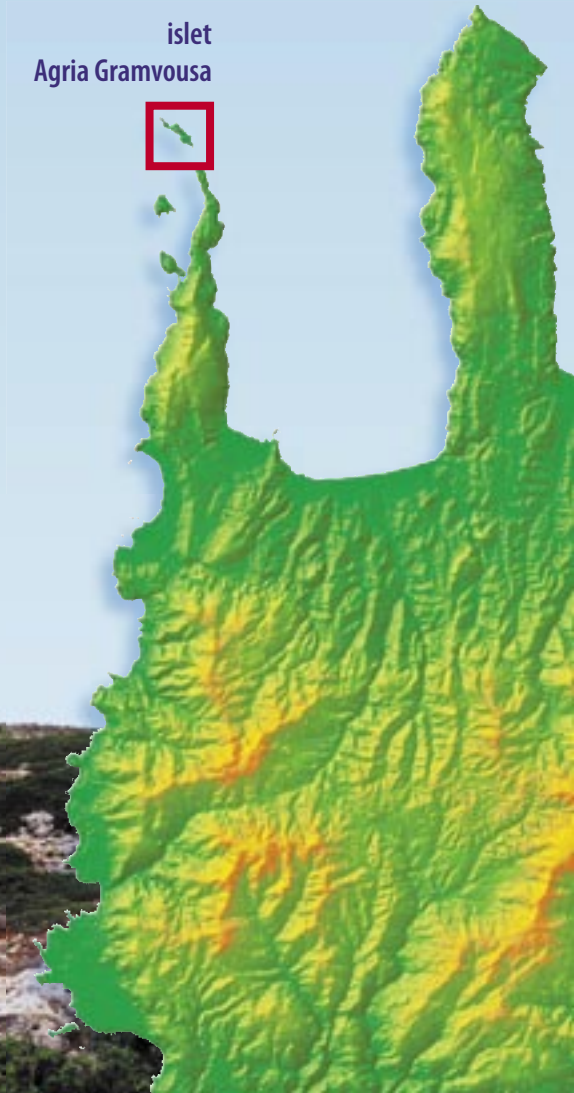
✓ This plant species was first described as *Ammanthus glaberrimus* from the Austrian botanist Karl Rechinger, who collected the plant from Agria Gramvousa on the 20th of April 1942.

✓ It is a small annual plant, similar to chamomile. It has flexuous stems ranging from 2-30 cm and many capitulas with a diameter of up to 1 cm. It flowers from April until May. Its fruits (achenes) mature at the end of May and the plant then dies.

✓ It is protected by the Greek Presidential Decree 67/81 and the Bern Convention, and is included in the Annexes II* and IV of the Habitats Directive. It is considered as one of the Top 50 most threatened Mediterranean island plants according to IUCN (The World Conservation Union). It is an endangered species according to the Red Data Book of Rare and Threatened Plants of Greece, because the areas where its populations grow are very limited and they are both vulnerable and susceptible to many types of threats (e.g. climatic changes).

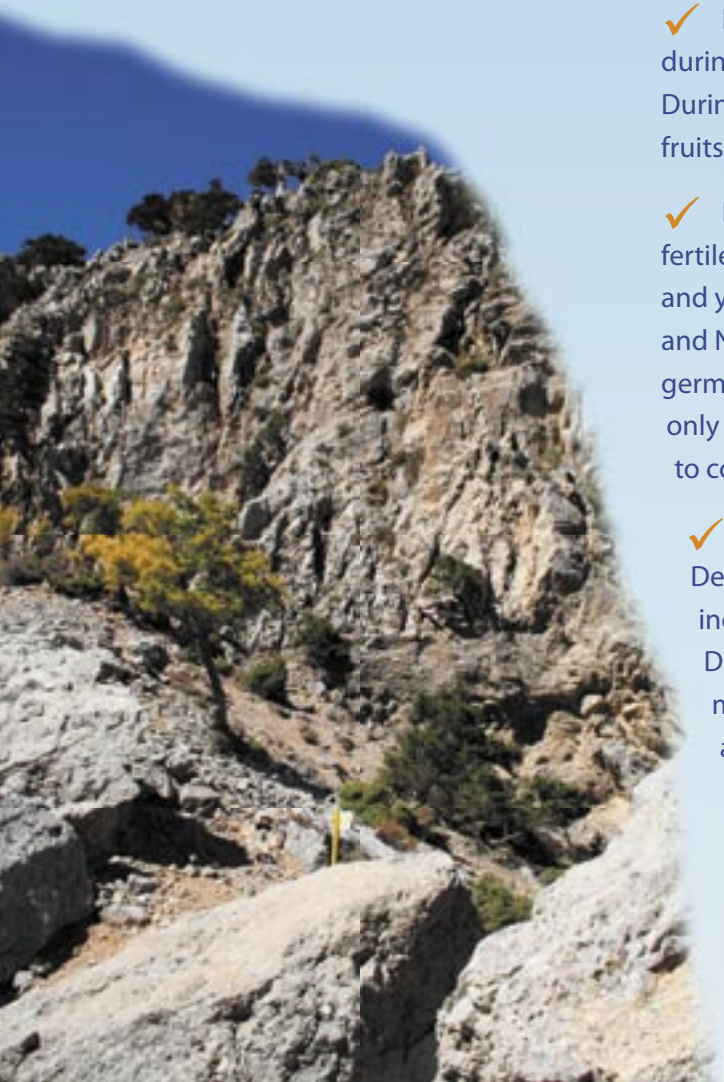
✓ To date, it is not yet known whether the plant has pharmaceutical properties and thus it is not utilised by man.

✓ In the framework of the CRETAPLANT project, the Micro-reserve of the plant has been set up in an area of 4.5 hectares on the northern side of the islet Agria Gramvousa.



Bupleurum kakiskalae

Did you know?



✓ The plant species *Bupleurum kakiskalae* grows on limestone cliffs at Linoseli (Kakiskala), along the steep slopes of the mountain cliffs of Lefka Ori in Western Crete, and nowhere else in the world.

✓ It was first described in 1967 by the Swiss botanist Werner Greuter.

✓ It is a perennial species, lives up to 12 years and, during most of its life time, produces only leaves. During the last year of its life, it flowers, produces fruits and then, it dies.

✓ It flowers between July and August and the fertile stems are up to 1m high. Its flowers are small and yellow. The fruits mature between October and November and during December, they start to germinate. At that time, many seedlings appear but only few of these will survive, due to overgrazing and to competition with other plant species.

✓ It is protected by the Greek Presidential Decree 67/81 and the Bern Convention, and is included in the Annexes II* and IV of the Habitats Directive. It is considered as one of the Top 50 most threatened Mediterranean island plants according to IUCN (The World Conservation Union). It is an endangered species according to the Red Data Book of Rare and Threatened Plants of Greece, because its unique and limited population is vulnerable to all types of threats (e.g. climatic changes).

✓ To date, it is not yet known whether the plant has pharmaceutical properties as do other related plant species and thus has not been utilised by man.

✓ In the framework of the CRETAPLANT project, the Micro-reserve of the plant has been set up in an area of 1 hectare at the locality of Linoseli where its unique population is confined.

Sakoulis Anastasios

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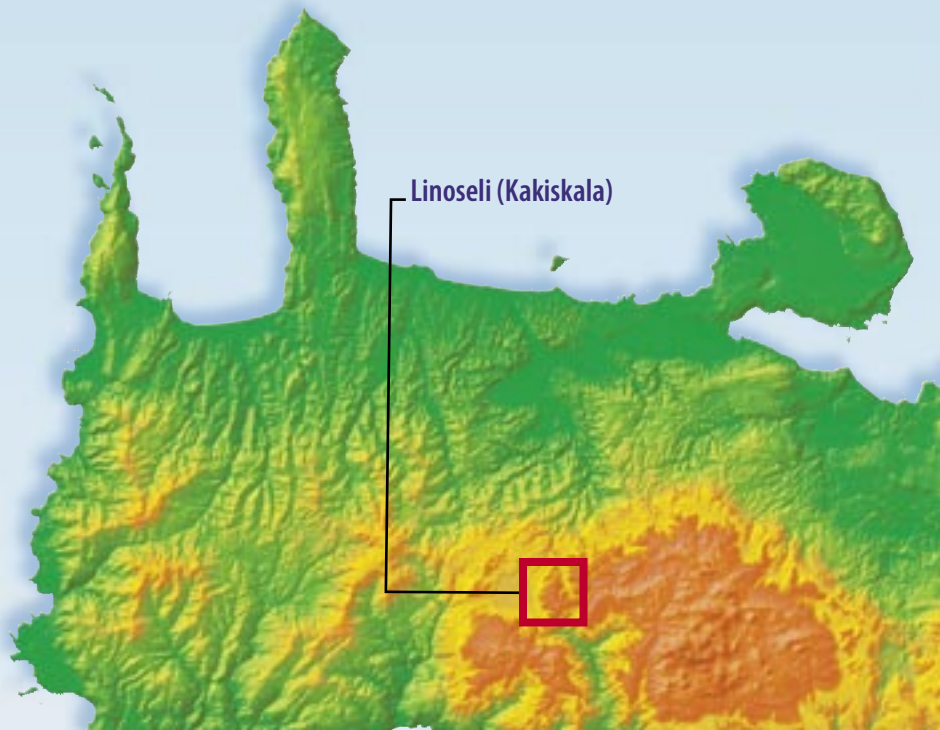


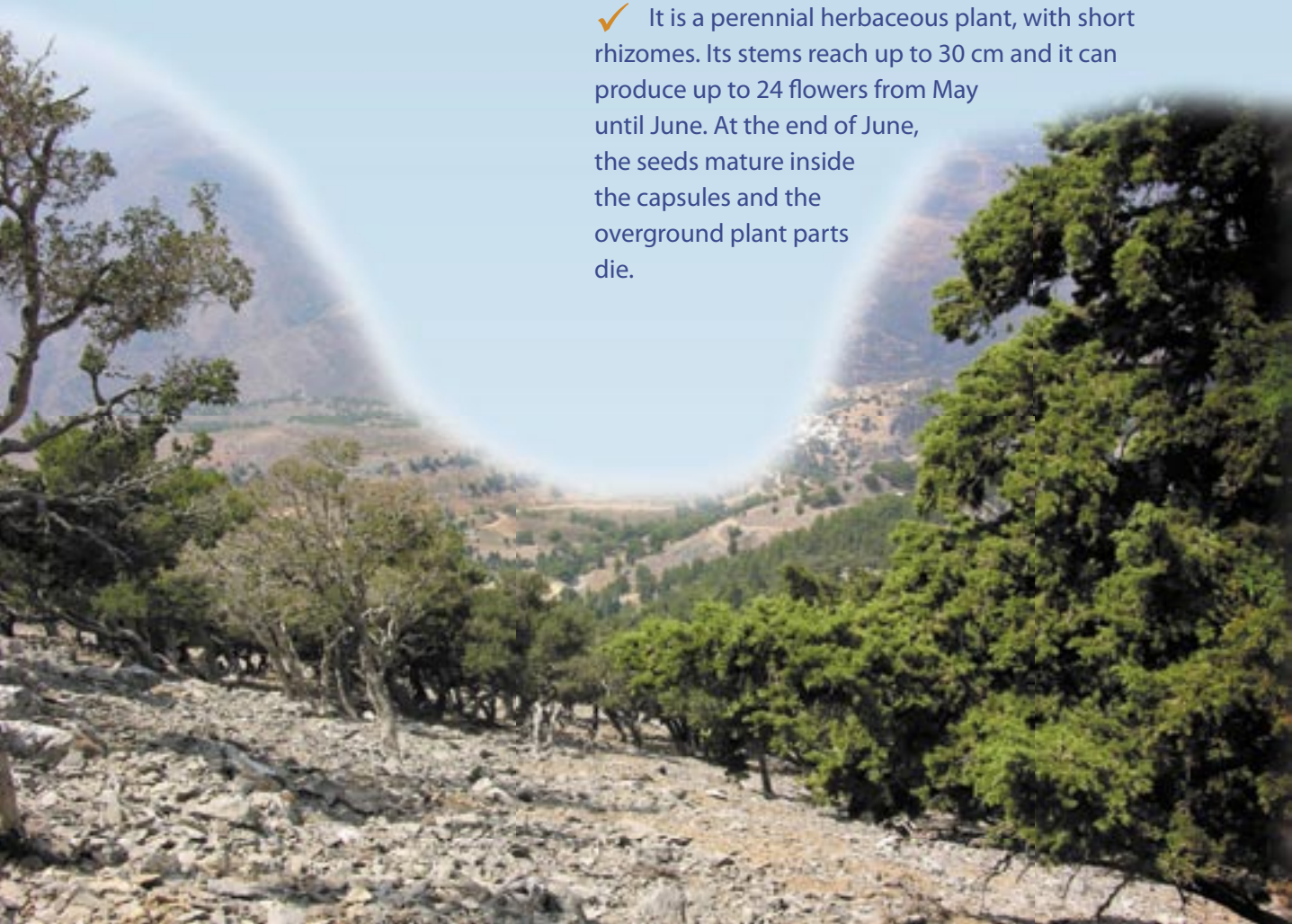
Cephalanthera cucullata

Did you know?

✓ The orchid *Cephalanthera cucullata* grows in mountainous forest areas all over Crete, on altitudes ranging between 700-1500 m, and nowhere else in the world.

✓ *Cephalanthera cucullata* was discovered from the French scientist Victor Raulinin, in May or June 1845.

✓ It is a perennial herbaceous plant, with short rhizomes. Its stems reach up to 30 cm and it can produce up to 24 flowers from May until June. At the end of June, the seeds mature inside the capsules and the overground plant parts die.



✓ It is protected by the Greek Presidential Decree 67/81 and the Bern Convention, and is included in the Annexes II* and IV of the Habitats Directive and the CITES Convention (Annex II). It is an endangered species according to the Red Data Book of Rare and Threatened Plants of Greece, because it exists in limited populations and the plant is threatened by overgrazing.

✓ In 1985, the Greek Ministry of Agriculture has characterized an area of 0.2 hectares, with a known population of the plant, on Mt. Psiloritis above the village Kamares, as a Protected Natural Monument.

✓ In the framework of the CRETAPLANT project, the Micro-reserve of the plant has been installed in an area of 12 hectares, near the village Koustogerako of the Municipality of Anatoliko Selino, on the mountain ranges of Lefka Ori.

Hypericum aciferum

Did you know?

✓ The plant species *Hypericum aciferum* grows on coastal rocks in the area of Sphakia (between Sougia and Agia Roumeli), at the southwestern part of Crete, and nowhere else in the world.

✓ It was first identified in 1965 by the Swiss botanist Werner Greuter as *Elodes acifera*.

✓ It is a perennial, short creeping shrub, with a height of up to 20-30 cm and length up to 130 cm. It flowers from June until October and its flowers are small with yellow petals. Its seeds mature from November until December.

✓ It is protected by the Bern Convention and is included in the Annexes II* and IV of the Habitats Directive. It is an endangered species according to the Red Data Book of Rare and Threatened Plants of Greece.

✓ To date, it is not yet known whether the plant has pharmaceutical properties as do other related plant species and thus it has not been utilised by man.

✓ In the framework of the CRETAPLANT project, the Micro-reserve of the plant has been created in an area of 6.5 hectares in the locality of Fournoti, west of Agia Roumeli village.

Nepeta sphaciotica

Did you know?

✓ The plant species Nepeta sphaciotica grows only on a mountainous slope at an altitude of 2300 m on the northern side of summit Svourichti of Lefka Ori, and nowhere else in the world.

✓ It was first described in 1953 by the British botanist Peter Davis who had discovered the plant on the 4th of August 1950.

✓ It is a perennial, aromatic shrub, which grows up to 20 cm high. It blossoms in August and its flowers are white with pink spots. The seeds mature in September.

✓ It is protected by the Greek Presidential Decree 67/81 and the Bern Convention, and is included in the Annexes II* and IV of the Habitats Directive. It is an endangered species according to the Red Data Book of Rare and Threatened Plants of Greece, because its unique and limited population is susceptible to various types of threats (e.g. climatic changes).

✓ Up to date, it is not known whether the plant has pharmaceutical properties and thus it is not used by man.

✓ In the framework of the CRETAPLANT project, the Micro-reserve of the plant has been established in an area of 4.8 hectares on summit Svourichti of Lefka Ori, where its unique population is located.

Habitat «Palm groves with *Phoenix*»

Did you know?

✓ This type of habitat is composed, particularly in Crete, of palm trees of the species called *Phoenix theophrasti*.

✓ This species of palm tree is a rare endemic to the Aegean region. It is found in Crete and SW Turkey (Datca penincula), in small sandy moist valleys or rocky areas in close proximity to the sea. It is known by the common name Phinikas or Vagi, and its largest known population is located in Vai, East Crete.

✓ It was identified as a new species in 1967 by the Swiss botanist Werner Greuter. He gave this palm tree that name in honour of the father of Botany, Theophrastos (372-287 b.c.), who first mentioned the existence of Phoenix in Crete , in his work entitled "The natural history of the plants".

✓ It is a dioecious tree, meaning that there are distinct trees carrying only female or male flowers. It reaches up to 10 m in height, produces suckers and it has one to several main trunks. It flowers from April until May and in October the fruits mature. The close relatives of the *Phoenix theophrasti* are the Date palm (P. *dactylifera*) which differs by its edible fruits and the *P. canariensis*, which is cultivated

extensively as ornamental in Crete. It differs by its single, taller, non-suckering and more robust stem.

✓ This habitat is included in Annex I of the Habitats Directive and is considered as a priority for conservation. The species *Phoenix theophrasti* is protected by the Greek Presidential Decree 67/81 and the Bern Convention, and is included in the Annexes II and IV of the Habitats Directive. In 1973, the population of Vai was declared an "Aesthetic Forest Preserve" (P.D. 121/73, FEK 170/A'/73) and is now protected by the national legislation.

✓ In the framework of the CRETAPLANT project, the Micro-reserve of the plant has been set up in an area of 2.2 hectares in the area of Chrisoskalitissa, south west Crete.

Activities within the framework of the project CRETAPLANT

✓ Detailed mapping of the areas of Plant Micro-Reserves

✓ Installation of a permanent monitoring system for the purposes of studying the abiotic (climate, soil) and biotic (animals, other plants) factors that affect the existence of the protected species. It further aims to record and protect other important plant species (endemic, threatened) that are found within the PMR. This system consists of:

- Permanent monitoring plots for the study of plant populations
- Automated meteorological stations within each PMR

✓ Fencing, pathways construction, employment of curators of the PMR, installation of informative signs

✓ Conservation of plants out of the PMR, in three botanical gardens: one garden located on the premises of MAICh and two in the mountainous area of Lefka Ori (at Poria and at the Information Centre of the Forest Directorate of Chania at Omalos). In addition, plant seeds will be preserved in the Seed Bank of MAICh in order to:

- Protect the species
- Study their germination
- Eventually utilise them in future restoration and reinforcement programs for the natural populations of the species

✓ Information and sensitization of the public, particularly of young people, regarding the outputs of the project and the value of the Cretan flora. The focal points of the information campaign will be the Visitor Centre of the Botanical Garden of MAICh and the Alpine Botanical Garden that will be created at Omalos.

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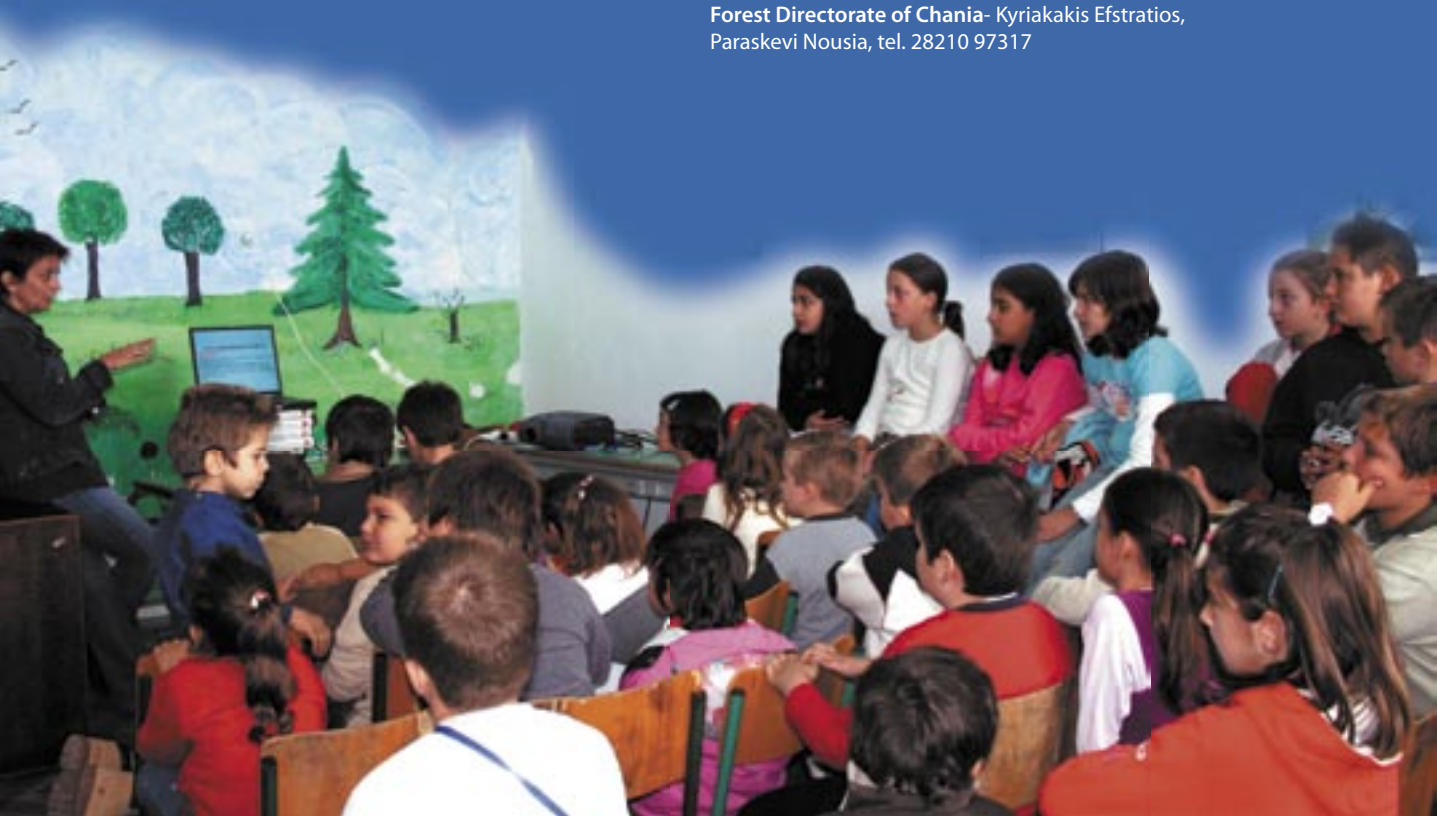

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