

The presentation of the plants in the Protected Area is a difficult task since a purely scientific approach would make hard for the non - experienced reader to recognize the beauty of the area. We hope that the plants' presentation according to the habitats they are distributed will help everybody to the magnificent tour in these ecosystems.

Wetland Plants



Dorycnium rectum, *Bromus tectorum*, *Apium graveolens*
Orchids (*Orchis laxiflora* and *Orchis palustris*)

Juncus heldreichianus,
Spiny rush (*Juncus acutus*), Sea rush (*Juncus maritimus*)

The Wetland plants vary a lot with respect to their size, biological cycle and adaptations to the wetland environment. A variety of different plants may exist in the same Wetland, e.g. mosses and deciduous trees. In the N.M.P.Z. Protected Area you will meet 8 different Wetlands with the respective plant communities. The most extended Wetland is the Keri Lake which is unique in Greece due to the natural outflow of petroleum known since the antiquity. Various types of marsh vegetation develop in the lake, depending on the water type (fresh or brackish), the duration of inundation and human influence (combustion, filling e.t.c.). The reed (*Phragmites australis*) is dominant throughout the lake but rushes (*Juncus* species) and sedges, such *Bolboschoenus maritimus* and the rare in the area *Cladium mariscus*, prevail locally.

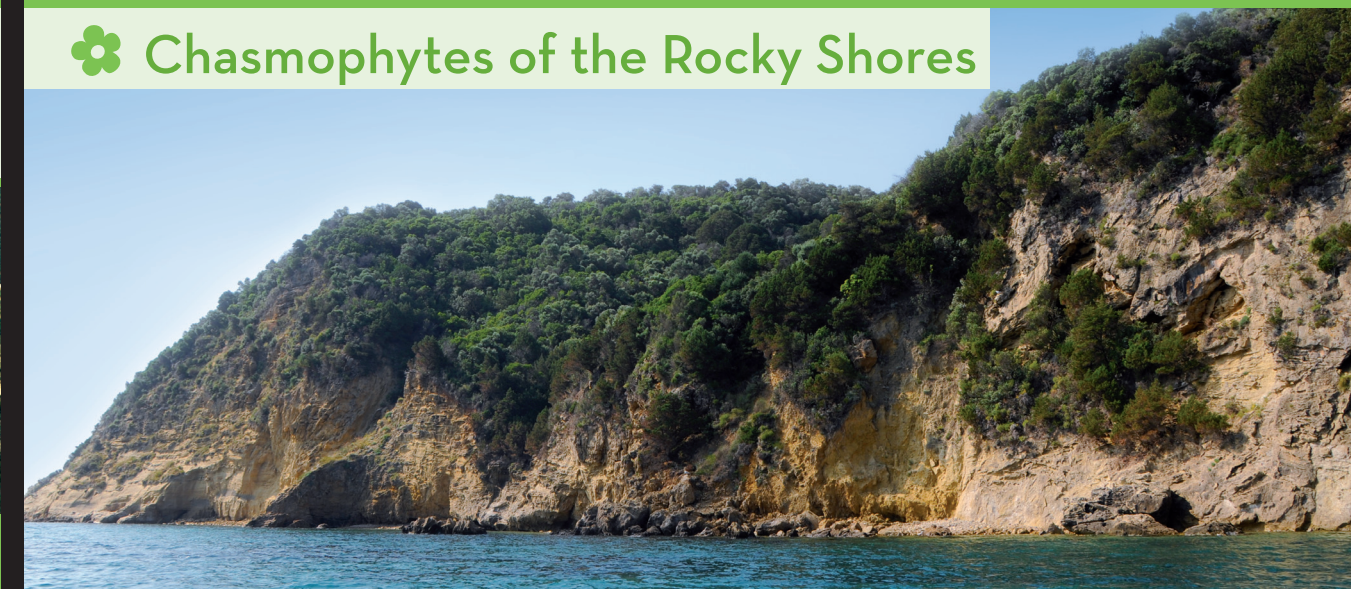


Reed Beds and Halophytic habitats (Salt Marshes)



Reed beds in water channel and Wetland Plants

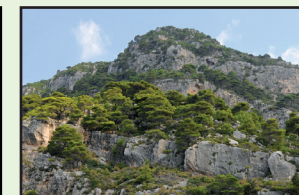
Chasmophytes of the Rocky Shores



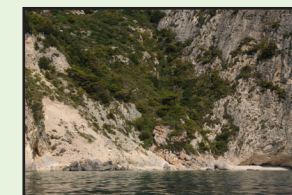
Coastal rocks are inhabited by the chasmophytes, plants adapted to the adverse conditions. At rocks substantially subject to the sea spray, halophytic communities develop with species such as *Crithmum maritimum*, *Lotus cytisoides*, (Sekania beach), *Matthiola sinuata* (Peluzo island, Agios Sostis beach), *Capparis spinosa* (Gerakas beach) and the Zakynthos endemics *Limonium zacinthium* and *L. phitosianum*. At the limestone coastal cliffs (Keri, Marathonisi, Peluzo), at zones not influenced by the sea spray, a rich chasmophytic vegetation develops characterised by the species *Ptilostemon chamaepeuce*, *Jacobaea maritima* subsp. *bicolor*, *Putoria calabrica* and the Greek endemic *Dianthus fruticosus* subsp. *occidentalis*. At the Keri area we meet the rare species *Asperula naufraga* (endemic in Zakynthos), *Stachys ionica* (endemic in the Ionian region), *Teucrium halacsysanum* (Greek endemic). Pines and junipers and the rare *Hypericum aegypticum* often descent to the steep rocks.



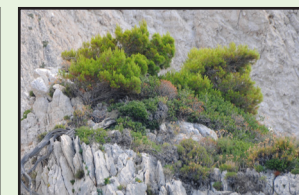
Ec. Type 1240



Ec. Types: 9540, 8210



Ec. Type 1240+8210



Sandy Coastal Vegetation



At the upper part of the drift line, only annual halo-nitrophilous species survive, like *Cakile maritima*. Immediately behind this, the sand dune ecosystem begins, with the first line of 'moving dunes'. Here, the "sand stabilizers", specialized plants that anchor the sand, form 'embryonic dunes' (dominant species is the sand couch grass *Elytrigia juncea*), or larger 'white dunes' (dominant species is the marram grass *Ammophila arenaria*), which occurs only at the extended beach of Laganas. Other amophilous species occurring on Zakynthos dunes are the sea lily (*Pancreatium maritimum*) and the sea holly (*Eryngium maritimum*). Behind the moving dunes, the 'fixed grey dunes' are formed, with small bushes such as *Helianthemum nummularium* and the thyme (*Coridothymus capitatus*) at Laganas or with perennial herbs like the *Centaurea seridis* subsp. *sonchifolia* at Marathonisi. Scrub with lentisc, myrtle and the large berried prickly juniper (Laganas) or the phoenicean juniper (Vasilikos) develops at the upper parts of higher, relatively stable, dunes.



Embryonic Shifting Dunes - Ec. Type 2110



Fixed Dunes - Ec. Type 2210



Fixed Dunes - Ec. Types 2270*, 2210

Scrub Vegetation



The scrub vegetation of the protected area includes mainly the evergreen sclerophyllous scrub, where dominates the species of the class *Quercetea ilicis* and the low bush, where species of the class *Cisto-Micromerietea* dominate. The typical species of the phrygana vegetation (height <0.6 m) are the *Cistus creticus*, *Erica manipuliflora* and the rare in Greece *Hypericum aegypticum*. There is also *Euphorbia dendroides* scrub (Laganas, Marathia, Marathonisi), which is rare in the Ionian region. Phoenicean juniper (*Juniperus phoenicea*) matorral is either arborescent (height >1,5 m), e.g. westward of Geraka up to Dafni and Sekania, or medium to low height and occasionally thin, e.g. at the precipitous shores of Marathia, Marathonisi and Peluzo. The typical species such as the lentisc (*Pistacia lentiscus*) belong to the class *Pistacio-Rhamentalia*. Evergreen sclerophyllous woodland formations (height >3 m) develop at the area of Marathias (e.g. *Ceratonia siliqua*, *Quercus coccifera*).



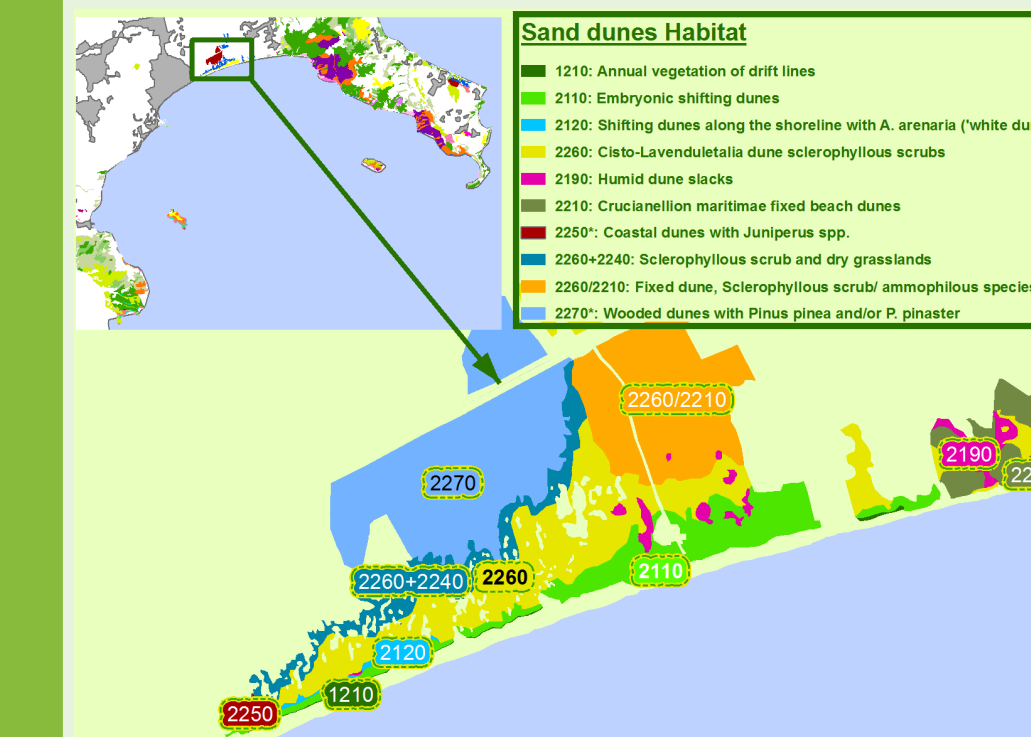
Arborescent Matorral - *Juniperus* spp. - Ec. Type 5210



Endemic forests-*Juniperus* spp. - Ec. Type 9560



Scrub vegetation with *H. aegypticum*



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Κάνουμε τις πράξεις,
ζούμε το αποτέλεσμα



Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης

Forests

Pine cones and Cypress FOREST

Location: Gerakas

The top dome is a mixture of *Pinus pinea* and acclimatized *Cupressus sempervirens* subsp. *horizontalis* and *C. sempervirens* subsp. *pyramidalis*. On the lower floor there are species of maquis (*Myrtus communis*, *Erica arborea*, *Cistus* sp.) while the ground cover includes Cyclamens, species of the family Araceae and Orchids. The small population of pine trees at Gerakas, is the remainder of the older bigger natural growth distributed in this area in the past.

Quercus ilex FORESTS

Location: Skopos Mountain, East and West of Skopos

The most representative forest in the area with dominant species *Quercus ilex* and the participation of *Quercus coccifera* develops at the Skopos Mountain. Small stands of *Quercus ilex*, of medium representation, also grow in few locations at the peripheral zone of the N.M.P.Z. East and West of the Skopos Mountain.

Pinus halepensis FORESTS

Location: Marathia, Vasilikos, Sarakina

Forests with *Pinus halepensis* constitute the most extensive vegetation type in the Protected Area. The lower floor of high bushes includes species such as *Quercus ilex*, *Quercus coccifera*, *Arbutus unedo*, *Pistacia lentiscus*. The lower floor of the low bushes includes species of brushwood, mainly species of the genus *Cistus* and the species *Anthyllis hermaniae*. The herbaceous lower floor is usually poor in closed forests and includes graminaceous species (e.g. *Dactylis glomerata*), Cyclamens and Orchids.



MIXED FOREST OF Quercus ilex AND HIGH MAQUIS

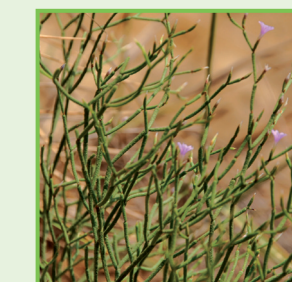
Location: Base of Skopos Mountain-Vasilikos, the hills behind Dafni, the hills of Vasilikos Porto Roma and Marathonisi island

There is a variety of oak mixed forests of *Quercus ilex* and *Quercus coccifera*. Generally, the forests are inaccessible due to the density of brambles (i.e. *Smilax aspera*). The Marathonisi and the Porto Roma forests are also covered by the climbing *Ephedra fragilis campylopoda*. The lower floor is dominated by Cyclamens and species of the Araceae family. At foothills of Skopos Mountain at Vasilikos, the forest contains also *Cupressus sempervirens*, *Lauris nobilis*, *Ceratonia siliqua* and the Orchid *Limodorum abortivum*.



Important species - Protection Status

100 important species have been recorded in the island of Zakynthos out of which 30 are characterized as Greek endemics and 13 as sub-endemics (limited distribution in Greece and in another country (i.e., *Crocus boryi*) or Balkan endemic (i.e. *Fritillaria messanensis* subsp. *gracilis*) and 3 exclusively endemic species. In the terrestrial Protected Area of the N.M.P.Z., the corresponding numbers modulate to 53 important species, 18 Greek endemics and 7 sub-endemics, and also 3 exclusively endemic species in the island of Zakynthos. From the recorded species 35 are subjected in a protection scheme, including the exclusively endemic species of Zante (*Asperula naufraga*-endangered) *Limonium phitosianum*-vulnerable, *Limonium zacynthium*-vulnerable) and *Arenaria peloponnesiaca* (vulnerable). 47 species of Orchids and Cyclamens expand to various areas and four of them are rare or almost endangered in Greece (*Ophrys reinholdii*, *Ophrys ferrum-equinum* subsp. *gottfriediana*, *Orchis laxiflora*, *Orchis palustris*). In addition, the local endemic species *Serapias ionica* has been classified as 'almost endangered' (NT- IUCN).



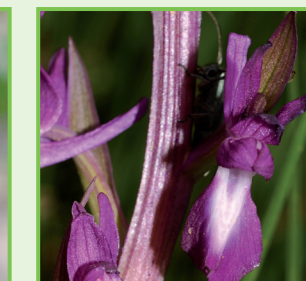
Limonium zacynthium



Serapia ionica



Ophrys scolopax



Orchis laxiflora

SCIENTIFIC NAME	COMMON NAME	Conservation Status	Protection Status	INDICATIVE HABITATS
<i>Alkanna corcyrensis</i>		NE		Mountainous, calcareous cliffs
<i>Allium ionicum</i>		NE		Open, dry and sunny locations at phrygana and low scrub vegetation
<i>Anchusella variegata</i>		LC		Rocky and gravelly locations, phrygana, dry meadows
<i>Arenaria peloponnesiaca</i>		V		Rocky slopes and embankments, sandy coastal edges
<i>Asperula naufraga</i>		EN		Coastal calcareous cliffs
<i>Brassica cretica</i> subsp. <i>aegaea</i>		LC		Calcareous cliffs
<i>Crocus boryi</i>		LC		Open rocky slopes, uncultivated olive grooves, at fixed coastal dunes
<i>Delphinium hellenicum</i>		NE		Dry rocky slopes, olive grooves, sandy coastal locations
<i>Dianthus fruticosus</i> subsp. <i>occidentalis</i>		DD		Calcareous cliffs
<i>Heptaptera colladonioides</i>		LC		Calcareous sunny rocky slopes and edges
<i>Iris unguicularis</i> subsp. <i>carica</i> var. <i>angustifolia</i>		NE		Dry, rocky locations at banks and slopes in open forests
<i>Leontodon graecus</i>		LC		Rocky slopes and cliffs, open pine forests, phrygana
<i>Limonium phitosianum</i>		VU/NT		Crevices of coastal rocks, sandy coastal locations
<i>Limonium zacynthium</i>		VU		Crevices of coastal rocks, usually at shady and semi-shady locations
<i>Medicago muricoleptis</i>		VU		Grasslands with solid and moist ground, olive grooves
<i>Ophrys ferrum-equinum</i> subsp. <i>gottfriediana</i>		R		Grasslands, garrigues, phrygana, open forests
<i>Ophrys reinholdii</i>	Reinhold's Ophrys	R?		Grasslands, garrigues, phrygana, forests
<i>Ophrys sphegodes</i> subsp. <i>spruneri</i>		NE		Grasslands, garrigues, open pine forests at terra-rosa at limestone
<i>Anacamptis coriophora</i>		R		Locations wetted or deluged by water
<i>Neotinea maculata</i>		NE		Grasslands on poor soils, garrigues, pine forests
<i>Anacamptis palustris</i>	Swamp-Living Orchid	I		Coastal salt marshes, humid grasslands, brackish soils
<i>Ornithogalum narbonense</i>		LC		Dry, stony slopes with residues of maquis and phrygana
<i>Ruscus aculeatus</i>	butcher's-broom	LC		Various types of scrub vegetation, usually of high or medium height
<i>Scorzonera crocifolia</i>		LC		Dry stony locations, phrygana (brushwoods)
<i>Serapias bergonii</i>	Bergon's Tongue-orchid	NE		Grassland on poor soils, garrigues, olive grooves, open forests
<i>Serapias ionica</i>		NT?		Open locations at phrygana and olive grooves, pine forests

Legend: Subendemics (light green), Greek endemics (medium green), Local endemics (dark green), CI TES E + PD 67/81 (orange), PD. 67/81 (red), CI TES E (yellow), Directive 92/43 (dark red)



Medicago marina



Cirsium creticum



Crithimum maritimum



Colchicum autumnale



Arum maculatum



Gynandris asyrinchium



Cistus salvifolius



Asphodelus fistulosus



Myrtus communis



Quercus coccifera



Ceratonia siliqua



Arbutus unedo



Coastal - Terrestrial Habitats and Flora

at the National Marine Park of Zakynthos (N.M.P.Z.)

The floristic richness of Greece is important, as it includes over 6,500 native plants, while the endemic taxa (species and infra-specific taxa) reach the 1,500. This high biodiversity, the largest in the European Union (taking into account the small area of Greece), should be attributed to the variety of bioclimate and geology, as well as to an adventurous paleogeology. The Protected Area of the N.M.P.Z., and especially the coastal and terrestrial ecosystems, as part of this richness, offers a unique experience to everyone to navigate the area and discover its special features and get its natural and fragile wealth.

