Introduction - Greece

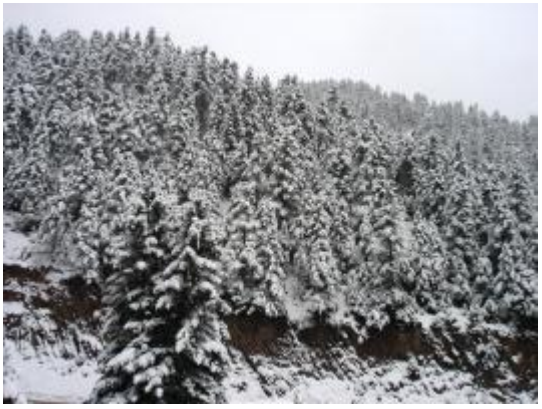
Greece occupies an area of 130,875 km2 at the southern tip of the Balkan Peninsula. Its population is approximately 10 million. Nearly half of these people live in the two largest cities, Athens and Thessaloniki. The country's topography is mostly mountainous. Small plains and valleys are interspersed between the mountains and constitute the main agricultural areas.

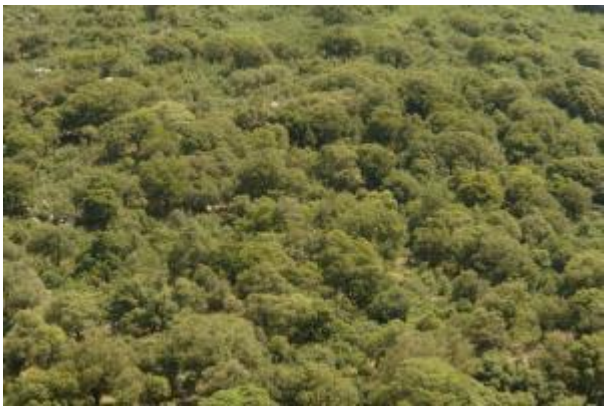
The climate is typically Mediterranean over most of the country, with warm-to-hot summers and mild winters. Usually there is little or no rain in the summer, but quite often the dry season may start as early as April and continue well into fall. Only some of the wettest locations at high elevations have more than 100 days of rain per year. Yearly precipitation may exceed 2,000 mm at those locations. On the other hand, the south-eastern tip of Greece, including the area around Athens and the Cyclades Islands in the Aegean Sea, has annual precipitation of less than 400 mm, which is one of the lowest in Europe.

Mean yearly temperature varies between 14.5°C in the north and 19.5°C on the southernmost island of Crete. Absolute minimum temperatures at high elevations in northern Greece may approach –25°C. In the summer, maximum temperatures occasionally reach 42-45°C at various inland locations. The influence of the Mediterranean Sea that surrounds the country on three sides helps moderate the air temperature in most areas.

Forest characteristics and forest types - Greece

In order to describe vegetation in Greece, we should accept that there is a certain distribution of vegetation according to altitudinal zones related to climate changes from the warm Mediterranean regions to cooler environments of high altitudes. The zones are generally poorly defined, and vegetation tends to vary in a more mosaic-like pattern.





Attempts have been made to characterize Greek vegetation by major altitudinal zones:
- the thermo-mediterranean (up to c. 400 m)
- the meso-mediterranean (c. 400-700 m)
- the supra-mediterranean (c. 700-1 800 m)
- the montane Mediterranean (c. 1 800-2 200 m)
- the supra-forest zone (c. 2 200-2 917 m)

Mediterranean evergreen forest. At low altitudes, the dominant species of evergreen broadleaved are *Ceratonia siliqua, Pistacia lentiscus, Olea europaea, Arbutus sp., Quercus coccifera, Quercus ilex, Erica sp.*, etc.

Forests of *Pinus halepensis, Pinus brutia,* occur in patches in the coastal lowlands and occasionally up to ca 800m. The forests are rather open, and have a shrub layer of evergreen species, such as *Juniperus phoenicea, Quercus coccifera, Phillyrea latifolia, Calicotome villosa, Erica arborea, E. manipuliflora. Cupressus sempervirens* is native in Crete (up to ca 1 800 m) and the East Aegean islands and is commonly naturalized elsewhere in the country.


Macchie or maquis. The term "macchie" or "maquis" is used for a dense sometimes impenetrable, scrub vegetation, generally 1.5-3.5 m tall and largely composed of hard-leaved evergreen species such as *Quercus ilex, Arbutus unedo, A. adrachne, Laurus nobilis, Myrtus communis, Erica arborea, Pistacia lentiscus, Phillyrea latifolia,* etc. Macchie also contains some deciduous shrubs such as *Cercis siliquastrum, Cotinus coggygria, Ostrya carpinifolia* and *Pistacia terebinthus*.


Phrygana. The term "phrygana" is used for an open dwarf scrub dominated by low, often cushion-shaped, aromatic, spiny or grey-leaved shrub. In islands and degraded evergreen broadleaved forests, (as a result of long and frequent fires) there are areas covered by "phrygana", with dominating species of *Cistus sp., Sarcopoterium spinosum, Coridothymus capitatus, Euphorbia acanthothamnus, Saturejia sp., Anthyllis hermanniae, Micromeria juliana.*

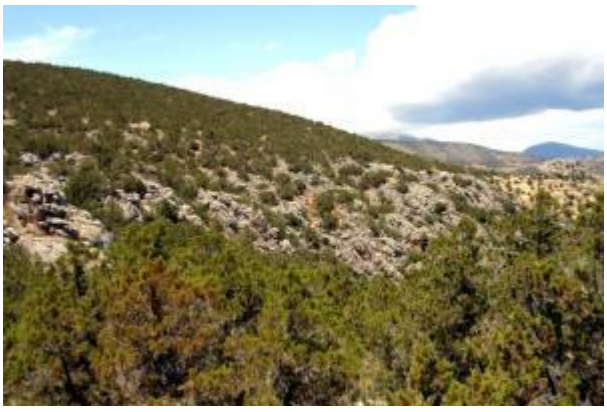
Deciduous forest. *Quercus pubescens* and *Q. frainetto* are the most widespread species of deciduous oaks generally occurring in the hills and lower mountain slopes between c. 300 and 800m, in the more continental parts of the country. Other deciduous trees and shrubs commonly found in this zone are *Q. cerris, Ostrya carpinifolia, Carpinus sp., Fraxinus sp., Acer sp., Coryllus sp., Tilia sp., Aesculus hippocastanum* etc.

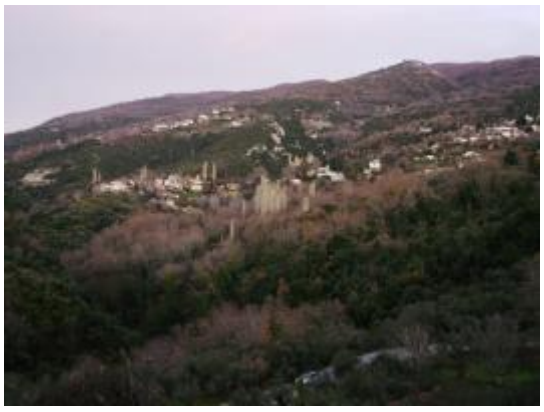
Well-developed natural forests of *Castanea sativa* occur locally in central and northern Greece.

Montane coniferous forest. Extensive coniferous forests, dominated by either *Pinus nigra,* or by *Abies* occur on the mainland at altitudes between ca 600 and 1,800m. The genus *Abies* is represented by the endemic *A. cephalonica* in the south, *A. x borisii-regis* in central Greece, and *A.alba* locally in the north. *Pinus sylvestris* forms forest locally on non-calcareous mountains in the north.

In the same zone, broadleaved deciduous *Fagus sylvatica* and *Fagus orientalis* form pure stands on the richer and deeper soils.

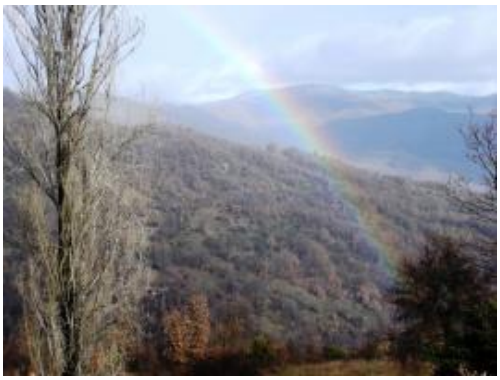
In higher altitudes, over 1,800 m., there are forests such as *Juniperus foetidissima* and *Pinus heldreichii.* In northern Greek borders and at medium altitudes, we can also meet forest sections of *Betula pendula, Larix decidua, Pinus peuce* and *Picea abies species.*





Subalpine and alpine communities. The timberline is generally formed by *Pinus* or *Abies*, in northern Greece sometimes by *Fagus*, and on Crete by *Cupressus*. Over ca 2,000-2,200 m the areas are covered from species of low-growing shrubs such as *Juniperus communis ssp. nana, Astragalus sp., Daphne oleoides, Acantholimon echinus, Arctostaphylos uva-ursi, Vacinium sp.*, etc.

Lowland cliff vegetation. Limestone cliffs and to some extent also cliffs of siliceous rocks, especially in Aegean region, are of great botanical interest, with a specialized flora called "chasmophytes". The chasmophytes are generally long-lived, woody-based perennials.

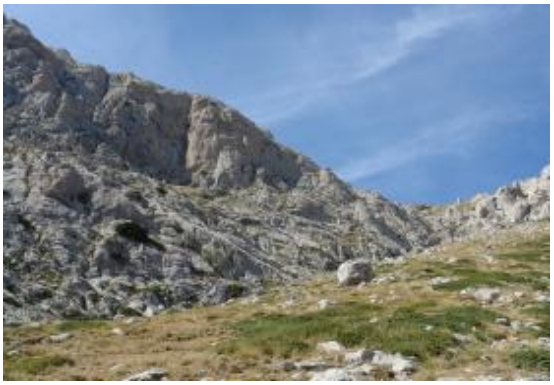


Riparian vegetation. Streambeds at low altitudes are generally lined by trees of *Platanus orientalis, Nerium oleander, Vitex agnus-castus* and at higher altitudes *Salix sp., Alnus glutinosa, Fraxinus angustifolia, Populus sp.*, etc.

The distribution of the areas for the main forest species is presented in the below *Table* .

Species	Area (1,000 ha)	Percent (%)
A. Coniferous		
Fir	543.3	16.17
Aleppo Pine, Calabrian Pine	567.7	16.90
Black pine	281.7	8.39
Scots pine	21.0	0.62
Pinus leucodermis	8.3	0.25
Stone Pine	0.1	0.003
Spruce	2.8	0.08
Other coniferous	5.2	0.15
Total coniferous	**1,430**	**42.57**
B. Broadleaved		
Beech	336.6	10.02
Chestnut	33.1	0.99
Oak	1,471.8	43.82
Plane tree	86.6	2.58
Other Broadleaved	0.8	0.02
Total broadleaved	**1,929**	**57.43**
Total forest area	**3,359**	**100.00**

Distribution of the areas for the main forest species



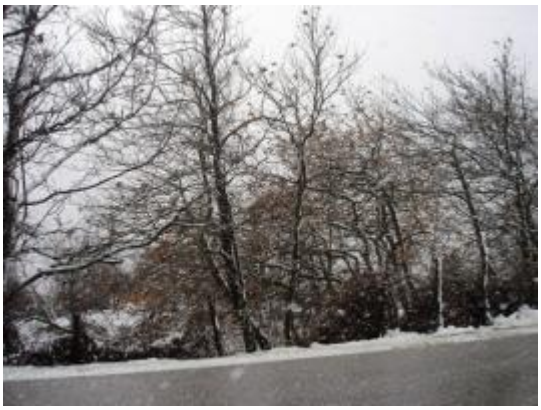
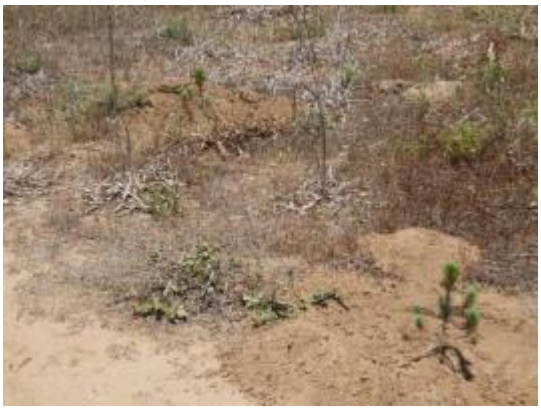
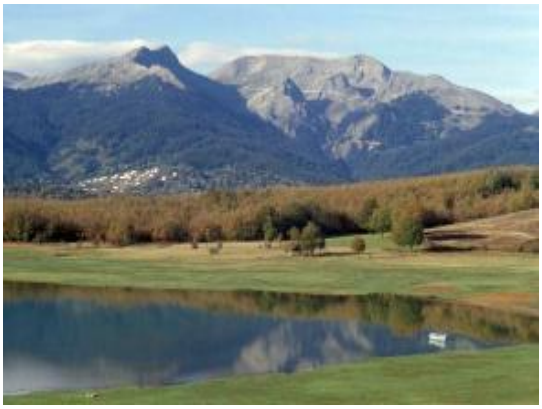
Typical and exceptional fauna and flora species in forests - Greece

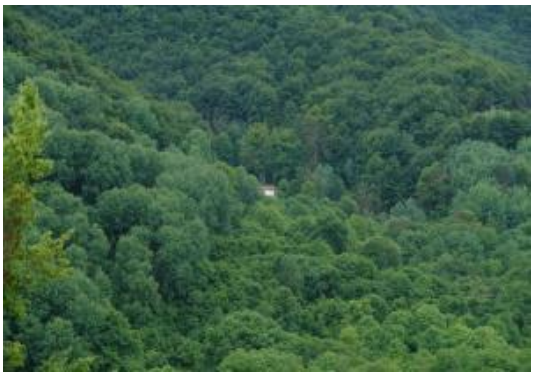
Flora

Greece occupies the southern part of the Balkan Peninsula, the total land area being 131,957 km^2. In Greece there are about 6,900 species and sub-species of wild-growing vascular plants. Endemic species and sub-species in Greece are over 1,300. Endemic species occur in a region and are exclusive to that region, not being found anywhere else in the Balkans or the rest of the world.

The richness of the flora is a result of a number of conditions, the most important being:

- An old flora containing many Tertiary species which have survived the Quaternary Ice Ages.
- Isolation of land masses, islands, mountain ranges, etc. as a result of the changes in level and extent of Mediterranean Sea.
- The proximity of other floras, notably the central European, Anatolian and Pontic floras.
- The influence of man and domestic animals in destroying and changing the natural plant cover.

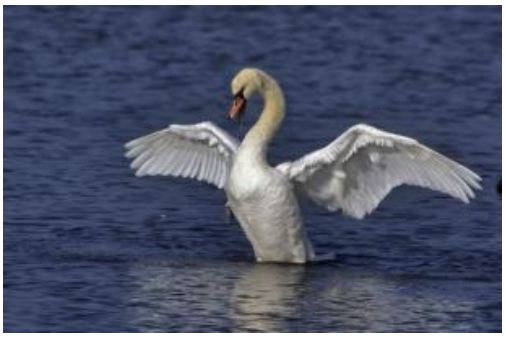
Fauna

Greece is an important east Mediterranean peninsula since it has an extremely diverse terrain and harbors many forest types ranging from mountainous habitats of dwarf pines to coastal gallery forests. The fauna of Greece as a result of this is of extended diversity and actually a mixture of European, Asian and African species. It includes bears, wild cats, brown squirrels, jackals, foxes, deer, wolves, lynxes, as well as rare species of wild-goat, which inhabit the mountainous regions of Crete. The mammals of Greece are about 116 species, of which 57 belong to IUCN endangered species categories. An astonishing number of 422 bird species is recorded, where the 2/3 of this are migratory birds. These habitats harbour many insect species which are rare or protected by nature conservation legislation. Many insects are to be described yet, especially endemic forms. The record of Greek entomofauna is around 30,000 species and we expect this to rise over 50,000 after intensive survey of all insect species. Of particular importance are insect species that inhabit dead wood and those living in the trunks

and hollows of trees (megatrees) within primeval forests. As a result of this many animal species make their lives on the rich entomofauna.

The most important reasons for which Greece harbours so many species are being:
- The mild climate that permits the insect activity all over the year
- The lack of Pleistocene glaciations in the area in spite of the intensity of the relief
- The "peninsula effect" that increased the number of endemics. Some remote areas (e.g. Mt Tayetos) at the edges of peninsulas have almost 45 % of endemics
- Many forests on the mountains of mainland and on islands harbour a diverse endemic fauna exploitable by many vertebrate species (birds, amphibian, serpents and small mammals and bats).

However the widespread urbanization and tourist areas and establishment brought many species on the brink of extinction whilst we are ignorant of how many species (especially insects) are now extinct before we know about their presence.

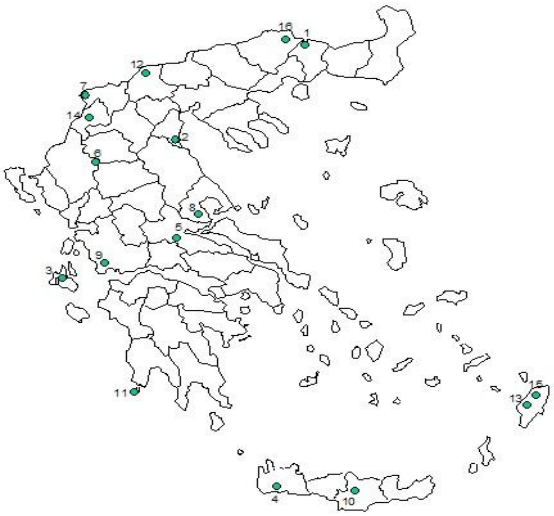




Forms of nature protection such as national parks and Natura 2000 sites - Greece

In Greece there are four forms of nature protection:

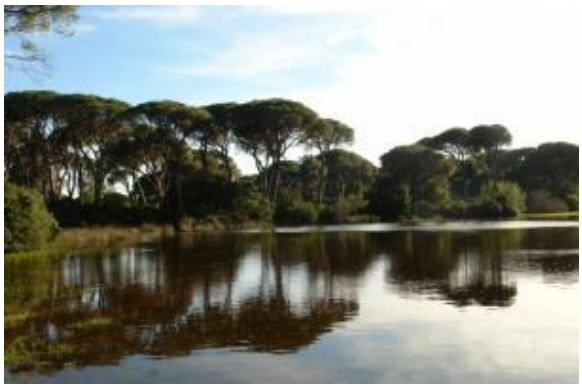
Ancient seminatural forest types

The area of ancient seminatural forest types in the country is about 22,143 ha. This area consists of the 16 regions that were integrated into the European network of biogenetic reserves. These regions are shown in the following map.



LEGEND
Location of ancient seminatural forest types
1. Trahaniou Xanthi - Virgin forest
2. Core area of Olympos - National Park
3. Core area of Ainos - National Park
4. Core area of Samaria - National Park
5. Core area of Oeti - National Park
6. Core area of Pindos - National Park
7. Core area of Prespes - National Park (Forest of Juniperus foetidissima)
8. Kouri-Almyros - Forest
9. Lecini of Etoloacarnania - Ash stand

10. Zaros Iraklio of Crete Canyon - "Rouva" Forest
11. Sapienza island of Messinia - Forest of evergreen broadleaves
12. Promahona Likostomou Arideas - Stand sections of Pinus peuce
13. Emponas of island Rodos - Natural cypress forest
14. Gramos-Vitsi of Kastoria - Ancient forest stands
15. Profitis Elias of island Rodos - Forest
16. Paranesti Drama - Virgin forest




Area of strictly protected forest reserves

Category	Number	Total area (1000 ha)	Area of forest and other wooded land (1000 ha)
National Parks	10	110	93.5
Aesthetic forests	19	33	24.7
Wetlands	10	96	24.0
Total	***39***	***239***	***142.2***

Area of forest and other forest land that is protected by a special management regime

Category	Number	Total area (1000 ha)	Area of forest and other wooded land (1000 ha)
Protected Natural Monuments	14	16.5	14.0
Controlled shooting Areas	10	150.0	127.0
Game Breeding Stations	20	3.2	3.2
Wild Life Refuges	700	950.0	807.5
Total	***744***	***1,119.7***	***951.7***

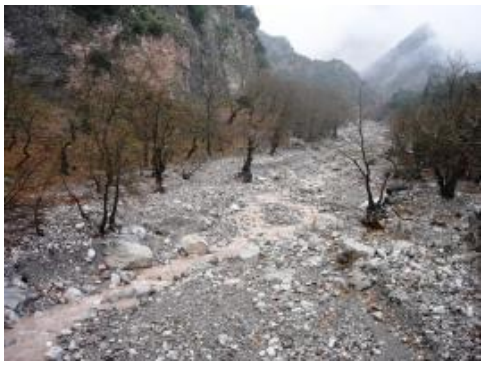
Natura 2000 sites

Nowadays in Greece 262 areas have been classified and inventoried that meet the requirements to be characterized as NATURA 2000 sites. These sites cover 22 % of the total Greek area and are divided into three main categories:

1. Mountainous and inland NATURA 2000 sites mainly consisted of big mountains and small hills, gorges e.t.c. which are far from coasts and wetlands.
2. NATURA 2000 wetlands like lakes, lagoons, rivers, swamps e.t.c.

3. Island and coastal NATURA 2000 sites, where the dominant element is coast but often as well the island's inland or even small islands as a whole.
Each unit contains a catalogue of all kinds of protected ecotypes that a visitor can meet as well as lists of rare and protected flora and fauna, according to the E.U Directives 79/409 and 92/43.

In Greece, there are 110 ecotypes of Annex I of the Directive, 39 plant species (flora) and 76 animal species (fauna) of Annex II. Based on the distribution of these ecotypes and species in Greece, 262 sites were recorded within which there are some of these habitats and some of these species. It's worth noting that 151 of these sites have been declared by our country as Special Protected Areas and 240 as Sites of Community Importance. From these figures can be concluded that many sites have been identified as having both properties. The total surface of these sites is estimated to be 30,000 km^2. From the above mentioned area (30,000 km^2), 6,000 km^2 are sea and 15,000 km^2 inland waters. Land sites, including inland waters, cover 18.2 % of the total area of Greece.




Organization of Forestry - Greece

The main body for protecting and managing the country's state forests as well as for supervising and keeping under control the private forests, is the Forest Service. This body operates under the name General Secretariat of Development and Protection of Forests and Natural Environment and consists of the Central Service and the Regional Services. The Central Service, which belongs to the Ministry of Environment, Energy and Climate Change, is the inspecting instrument of the whole administrational structure of the Forest Service and consists of 6 Directorates. These are responsible for formulating forest policy, elaborating long-term programmes of forest development, monitoring scientific and technological development in managing forests, working out fire protection programmes, supervising and strengthening research programmes and finally promoting the country's co-operation with EU, third countries and International Organisations.


The Regional Services, which belong to the Hellenic Ministry of Interior Decentralization and E-government, are the instruments for executing the instructions and forest policy in general formulated by the Central Service, but also for applying local programmes and studies. They are divided into Intraprefectural and Prefectural Services. The Intraprefectural Services consist of 7 Specific Regional Forest Inspectorates and 13 Forest Inspectorates for each of the 13 administrative regions of the country. The Prefectural Services consist of 31 Forest Directorates with 80 Forest District Offices and 24 Directorates without Forest District Offices, while 2 Directorates of Reforestation in Attica and Thessaloniki Prefectures are in operation. Also, within the framework of the Forest Service collective instruments such as the Revisional Council for the Property of Forests, the Forest Technical Council, the Forest Property Council and the Regional Councils and Committees operate.
Besides the Forest Service, other bodies that contribute to forest protection and development are the following:

- **Panhellenic Confederation Union of Agricultural Co-operation (PASEGES)**
- **Forest Owners Association of Greece (F.O.A.)**
- **The Geotechnical Chamber of Greece (GEO.C.G.)**
- **The Hellenic Forestry Society (H.F.S.)**
- **Non-Governmental Organisations (NGOs)** for Environmental protection such as the Hellenic Society for the Protection of Nature, the Hellenic Ornithological Society, the World Wide Fund for Nature Hellas, the Greek Biotope/Wetland Centre and the Arcturos Society.

Furthermore, two Forest Institutes carry out forest research and two University Forestry Schools and four Technological Educational Institutes of Forestry provide forestry education.