

The Pines of Cyprus



Seminar contribution to the module "Terrestrial Ecosystems" (2101-230)
Institute of Botany (210a) · University of Hohenheim · Stuttgart
presented by Justus Müller-Kiefer on January 16, 2019

Content

The Genus *Pinus*

Pinus brutia TEN.

Morphology

Distribution

Ecology

Sociology

Uses

Pinus nigra J.F.ARNOLD

Pinus halepensis MILL.

Pinus pinea L.

The genus *Pinus*

Pinus is the name-giving genus of its family Pinaceae, belonging to the gymnosperms.

They are almost exclusive to the northern hemisphere, they are very wide spread there, some species are invasive in the southern hemisphere.

All member of the clade are woody, most of them trees, some are shrubs and all are monoecious.

One of the most important identification feature of the genus is the way the needle-shaped leaves are growing in pairs of 2-6 in fascicles.

Pinus brutia Ten.

Common name “Calabrian or Turkish pine”, in German “Kalabrische Kiefer”.

It is native to the east Mediterranean region.

First described in Calabria (southern part of mainland Italy) by Michele Tenore (1811). It does not occur naturally there. In Roman times Calabria was the province Brutia.

It generally occurs in the coastal zone at low altitudes from sea level up to 1500 m a.s.l.



Pinus brutia [2].

Pinus brutia Ten.

Morphology

Pinus brutia grows as a tree getting 27-35 m tall, usually has a open crown with irregular branches. The diameter of trunk reach up to 150 cm.

The shoots are slender, 3-7 mm thick, with persistent scale-leaf bases, the leaves are in fascicles of two and 10-18 cm long.

The leaves are about 1 mm thick, stiff and live for 1.5-2.5 years, they are bright green to yellow green.



Foliage of *Pinus brutia* [3].

Pinus brutia Ten.

Morphology

The cones are 6-12 cm long, 4-5 cm broad and green when closed, they are symmetrical and broad conic.

The cones are erect and are occurring on short stalks. The cones take two years for ripening after pollination.

Ripe cones are shiny reddish-brown.



unripe and ripe cones still attached to the tree [4].

Pinus brutia Ten.

Distribution

Pinus brutia occurs only in the eastern part of the Mediterranean, in Anatolia, the Caucasus, and in some coastal regions of the northern Black sea.

Four variants are described:

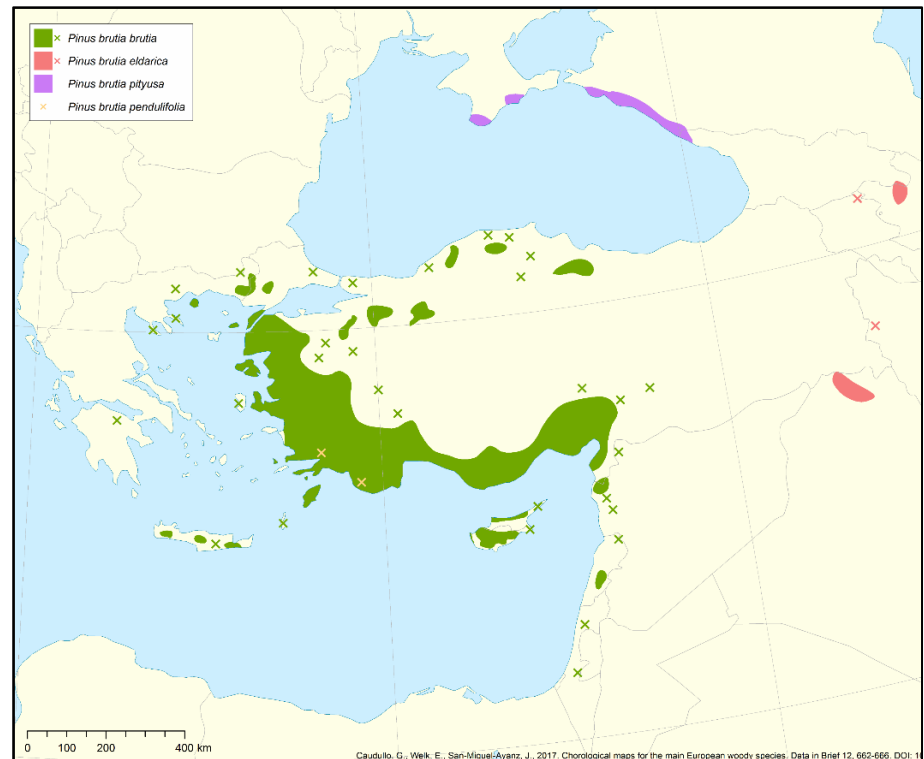
Pinus brutia var. *brutia* (green)

Pinus brutia var. *eldarica* (pink)

Pinus brutia var. *pityusa* (violet)

Pinus brutia var. *pendulifolia*

Only *Pinus brutia* var. *brutia* occurs on Cyprus.



Map showing the natural distribution of *Pinus brutia* [5].

Pinus brutia Ten.

Distribution

The Calabrian pine is the most important forest tree species on Cyprus. Forests with it as primary species make up about 90% of the forested area on the island.

The greatest populations can be found in the Kyrenia Mountains in the northern part of the island.

Above 1500 m a.s.l. in the Troodos mountain range in the southern part of the island *Pinus brutia* is replaced by *Pinus nigra* which is less thermophilic. There is a transitional zone where both species occur side by side.



Satellite image of Cyprus in spring [6].

Pinus brutia Ten.

Ecology

Pinus brutia has few soil requirements, it can cope with quite shallow soils, but avoids soils which are susceptible to waterlogging.

On Cyprus the Calabrian pine often occurs on rendzinas, a shallow type of soil which develops on limestone.

It also occurs on colluvial soils, which are loose sedimentary soils.

It can grow on poor sandy soils.

Pinus brutia Ten.

Ecology

Pine forests are very prone to wildfires due to an abundance of flammable essential oils and resins.

Pinus brutia starts to produce cones very early on, as soon as the second year.

The cones open up either under hot summer condition, after wildfires or after softening up due to rain in winter.

Its seeds are heat resistant, they can withstand temperatures of up to 150°C and are viable for a long time. They stay dormant in the ground and sprout after wildfires.

The seedlings grow so fast that the pine is able to quickly re-establish its population after the event of fire. It is considered a pioneer species because of that.

The rejuvenation by fire is a very important aspect of the natural succession in those Mediterranean type ecosystems.

Pinus brutia Ten.

Sociology

Pinus brutia has a great need for light and is therefore easily outcompeted in shady conditions. That allows shrubs and herbs to grow in the understory of *P. brutia* forests.

The kermes oak *Quercus coccifera* subsp. *calliprinos* (Fagaceae) is one of the most commonly found shrubs in the undergrowth.



Quercus coccifera subsp. *calliprinos* [7].

Pinus brutia Ten.

Sociology

The Greek strawberry tree *Arbutus andrachne* L. (Ericaceae) and the Turpentine tree *Pistacia terebinthus* L. (Anacardiaceae) often occur in the low altitude of pine forests.



Arbutus andrachne [8].



Pistacia terebinthus [9].

Pinus brutia Ten.

Sociology

Cupressus sempervirens L. (Cupressaceae) only coincides with *Pinus brutia* on very dry places like the southern side of the Kyrenia Mountains.



Cupressus sempervirens with *Pinus brutia* in the foreground [10].

Pinus brutia Ten.

Usus

The primary use of *Pinus brutia* is in timber production. The wood is used for construction, carpentry, paper production and as firewood.

The wood of *Pinus brutia* is relatively light with a density of 565 kg/m^3 , it was used for shipbuilding for that reason.

The resin is used for turpentine making.

It can grow on sand and is therefore often planted to reduce erosion on susceptible sites.

Pinus brutia Ten.

Usus

Aphids which feed on *Pinus brutia* produce honeydew that is collected by bees and is then harvested and sold as “pine honey”.

The seeds are edible.

Another traditional use is the infusion of white wine with the pine resin which is then called Retsina.

The resin is also used for the production of turpentine.



Pine honey [11].



A bottle of Retsina [12].

Pinus nigra J.F. Arnold

The common name is “black pine”, in German “Schwarzkiefer”.

25 - 45 m tall tree, straight trunk, bark scaly-plated and grey-brown the entire length of the trunk.

The leaves are in fascicles of two, stiff, 8 - 15 cm long and 1,5 - 2 mm thick. Leaves dark green, slightly twisted

Occurs in mountainous regions around the Mediterranean (on Cyprus ~1300-2000 m a.s.l., therefore only in the Troodos mountains).



Pinus nigra [13].

Pinus halepensis Mill.

The common name is “Aleppo pine”, in German called it “See-Kiefer”.

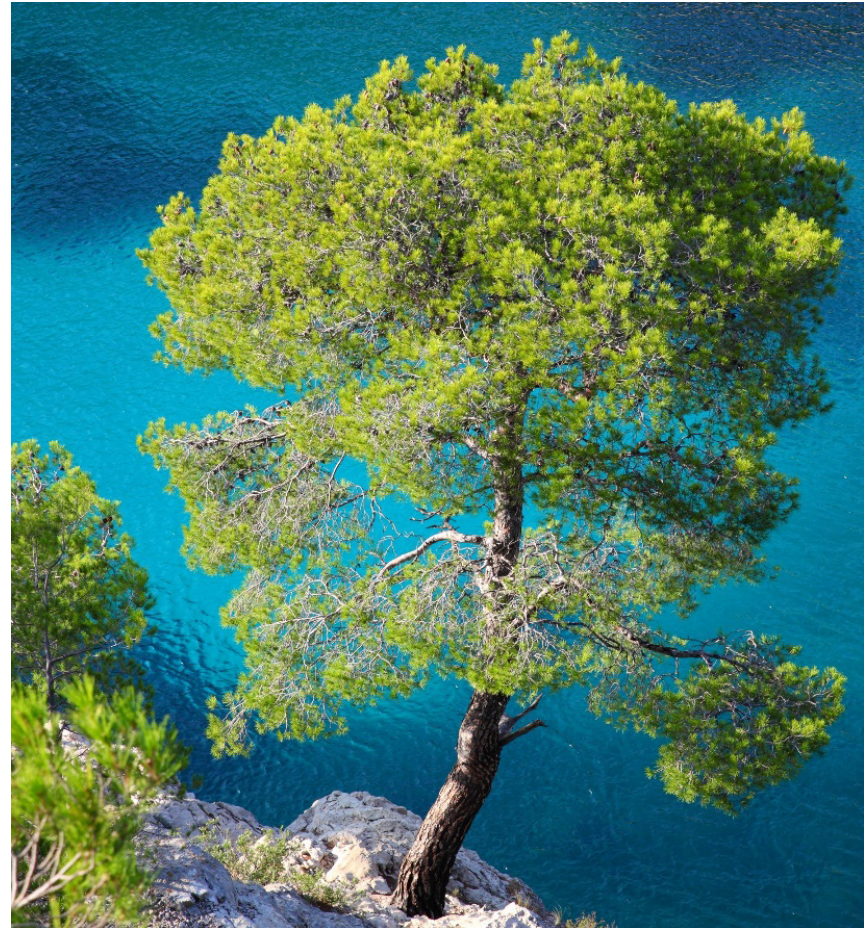
15 - 25 m tall tree, BHD up to 1,5 m, single trunk, open crown.

The leaves are in fascicles of two and 5 - 12 cm long, 1 mm thick. Leaves dark green, soft and flexible.

Does not occur natively on Cyprus, but is occasionally planted so in the Alevkaya forest.

Is closely related to *Pinus brutia* and natural hybrids occur.

Pinus halepensis [14].



Pinus pinea L.

The common name is “stone pine” or “umbrella pine”, in German “Pinie” or “Schirmkiefer”.

25 - 30 m high tree, with a DBH up to 1,9 m, characteristic umbrella-shaped canopy. Bark thick, plated red-brown to orange.

The leaves are in fascicles of two and 10 - 18 cm long, 1,5 mm thick.

Grows on sandy coastal regions with mediterranean climate, native to Spain, on Cyprus the tree is an archaeophyte, cultivated for its edible seeds.



Pinus pinea [15].

References

Bluskova, G., Tashev, A. & N. Bardarov (2009): Structure, properties and possibilities of use of wood of Turkish pine (*Pinus brutia* Ten.), 67-71. – 2nd Scientific Technical Conference “Innovation in woodworking industry and engineering design”, 6-8 November, Yundola, Bulgaria.

Bucci, G., Anzidei, M., Magaghiele, A. & G.G. Vendramin (1998): Detection of haplotypic variation and natural hybridization in halepensis-complex pine species using chloroplast simple sequence repeat (SSR) markers. - *Molecular Ecology* 7 (12): 1633–1643.

Conkle, M.T., Schiller, G. & C. Grunwald (1988): Electrophoretic analysis of diversity and phylogeny of *Pinus brutia* and closely related taxa. - *Systematic Botany* 13: 411-424.

Meikle, R.D. (1977): *Flora of Cyprus*, vol. 1. – Kew (UK).

Mirov, N.T. (1967): *The genus Pinus*. - New York (USA).

Pantelas, V. (1986): The forests of brutia pine in Cyprus. Le pin d'Alep et le pin brutia dans la sylviculture méditerranéenne. - CIHEAM (Options Méditerranéennes, Série Etudes 86 (1): 43–46.

<https://www.biodiversitylibrary.org/page/359021#page/442/mode/1up> (Species plantarum). Request 17.12.2018.

<http://www.theplantlist.org/tpl1.1/search?q=pinus> (The Plant List). Request 17.12.2018.

https://www.conifers.org/pi/Pinus_brutia.php. Request 17.12.2018.

http://www.flora-of-cyprus.eu/cdm_dataportal/taxon/612dbcc0-b224-4df4-a465-060ef3753b94. Request 20.12.2018.

Illustrations

- [1] Leonid Mamchenkov in: https://commons.wikimedia.org/wiki/File:Pinus_brutia_forest_Cyprus.jpg. Request 10.01.2019.
- [2] Zeynel Cebeci in: https://commons.wikimedia.org/wiki/File:Pinus_brutia_-_K%C4%B1z%C4%B1%C3%A7am_03.JPG. Request 10.01.2019.
- [3] Leonid Mamchenkov in: https://commons.wikimedia.org/wiki/File:Pinus_brutia_foliage_Cyprus1.jpg. Request 10.01.2019.
- [4] أنس عفيف عماد in: https://commons.wikimedia.org/wiki/File:Pinus_brutia.JPG. Request 14.01.2019.
- [5] https://figshare.com/articles/Pinus_brutia_chorology/5113915. in: Caudullo, G., Welk, E. & J. San-Miguel-Ayanz (2017): Chorological maps for the main European woody species. Data in Brief 12, 662-666. DOI: doi.org/10.1016/j.dib.2017.05.007 111. Request 10.01.2019.
- [6] NASA in: https://commons.wikimedia.org/wiki/File:Satellite_image_of_Cyprus,_cropped.jpg. Request 4.01.2019.
- [7] Juan Carlos from Tàrbena, Alicante in: https://commons.wikimedia.org/wiki/File:Quercus_coccifera_con_bellotas.jpg. Request 14.01.2019.
- [8] Zeynel Cebeci in: https://commons.wikimedia.org/wiki/File:Greek_Strawberry_Tree_-_Sandal_A%C4%9Fac%C4%B1_-_Arbutus_andrachne_01.JPG. Request 14.01.2019.
- [9] Consultaplantas in: https://commons.wikimedia.org/wiki/File:Pistacia_terebinthus_1c.JPG. Request 14.01.2019.
- [10] Chneophytou in: https://commons.wikimedia.org/wiki/File:Cypress_Halefka.JPG. Request 14.01.2019.
- [11] Adam Jones from Kelowna in: [https://commons.wikimedia.org/wiki/File:Vendor_of_Honey_and_Pine_Nuts_at_Asclepiion_-_Bergama_\(Pergamon\)_-_Turkey_\(5747231369\).jpg](https://commons.wikimedia.org/wiki/File:Vendor_of_Honey_and_Pine_Nuts_at_Asclepiion_-_Bergama_(Pergamon)_-_Turkey_(5747231369).jpg). Request 14.01.2019.
- [12] Nsaa in: <https://commons.wikimedia.org/wiki/File:Retsina.JPG>. Request 14.01.2019.
- [13] Myrabella in: https://commons.wikimedia.org/wiki/File:Pin_laricio_Corse.jpg. Request 14.01.2019.
- [14] https://commons.wikimedia.org/wiki/File:Calanques_-_Calanque_de_Port_Pin_-_Pinus_halepensis.jpg. Request 14.01.2019.
- [15] Fontema in: https://commons.wikimedia.org/wiki/File:Pino_Monserrato.JPG. Request 14.01.2019.