

## Juniperus oxycedrus in Europe: distribution, habitat, usage and threats

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The prickly juniper (*Juniperus oxycedrus* L.) is a thermophile shrub or small tree native across the Mediterranean region, around the Black Sea and Middle East. It grows in dry areas on the coasts and lowlands under Mediterranean climate conditions, but it is also found in higher elevations in wetter forests with a more continental environment. It is suitable as an ornamental shrub; essential oils can be extracted and used for medical purposes. This juniper is widespread and often abundant, their populations are stable.

The prickly juniper (*Juniperus oxycedrus* L.) is a shrub or small tree which grows up to 10-15m in height. The crown shape is conic in young specimens and irregular in adults. The trunk has fibrous grey to brown-red bark peeling in longitudinal stripes. It has numerous branches, spreading or ascending. The leaves are needle-like and in alternating whorls of three. The needles are 1-2.5cm long and 1-2.5mm wide, with two waxy, white shallow **stomata** furrows above and a ridge below and a spiny tip. This species is **dioecious**. The male plants have solitary pollen cones in the leaf axils. They are yellow and egg-shaped, with three to seven pollen sacs below. Female plants have axillary berry-like seed cones known as **galbulus**. They are approximately spherical, brown-red in colour and 7-12mm long, maturing in two years. They do not open and end in three small triangle-shaped protuberances. Inside are one to three brown triangular-ovoid seeds<sup>1-4</sup>.



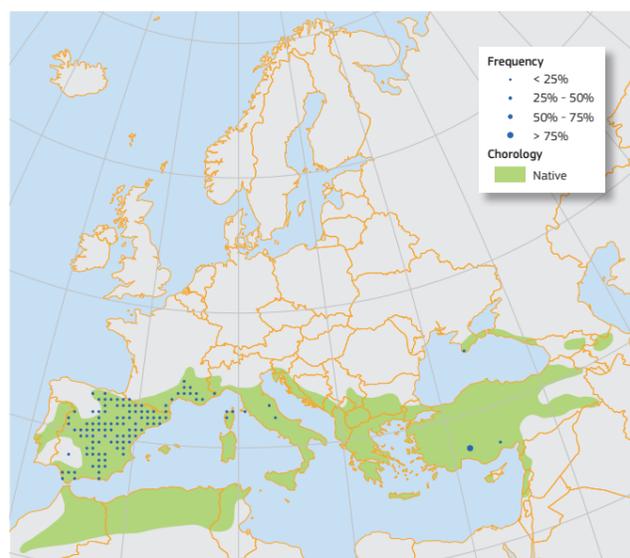
⋯ Mediterranean coastal vegetation with prickly juniper shrubland. (Copyright Stefano Zerauscheck, www.flickr.com: AP)

### Distribution

This juniper is native to the Mediterranean region and widespread from Morocco and Portugal, to Lebanon and Syria, reaching Kurdistan in Iran, Iraq and the Caucasus mountains. There are four commonly accepted subspecies: *Juniperus oxycedrus* subsp. *oxycedrus* has the largest range set in the inlands as well as in the coasts of the species distribution range, *Juniperus oxycedrus* subsp. *macrocarpa* commonly throughout the coasts of the Mediterranean and Black Sea, *Juniperus oxycedrus* subsp. *badia* in the inlands of North Algeria and Iberian Peninsula, *Juniperus oxycedrus* subsp. *trastagana* in lowlands and coasts of central Portugal and South-West Spain<sup>1, 3, 5</sup>.

### Habitat and Ecology

The prickly juniper is largely restricted to regions with a Mediterranean climate, but in the inlands of the Balkans and the Iberian Peninsula it may occur in more continental conditions<sup>6</sup>. The altitudinal range goes from sea level to 2200m<sup>2</sup>. It occurs on dry thin soils over all kinds of material rocks from calcareous to siliceous and serpentine, commonly also on sand dunes. It can also be found in pastures at higher altitudes, where it is usually a sign of overgrazing<sup>2</sup>. The lowland subspecies are never far from the



⋯ Map 1: Plot distribution and simplified chorology map for *Juniperus oxycedrus*. Frequency of *Juniperus oxycedrus* occurrences within the field observations as reported by the National Forest Inventories. The chorology of the native spatial range for *J. oxycedrus* is derived after Jalas and Suominen, and Klimko, et al.<sup>10, 11</sup>.

sea. They are principally associated with coastal grass and shrub vegetation and in the clearings with Mediterranean pine woods: Aleppo pine (*Pinus halepensis*) Turkish pine (*Pinus brutia*), Italian stone pine (*Pinus pinea*) and maritime pine (*Pinus pinaster*). The inland subspecies are found at higher elevations in the maquis and garrigue shrubland or open sclerophyll woods dominated by holm oak (*Quercus ilex*), mastic (*Pistacia lentiscus*) and European hornbeam (*Carpinus betulus*), as well as appearing in montane and wetter forests with cedar of Lebanon (*Cedrus libani*), black pine (*Pinus nigra*) and other junipers (*Juniperus foetidissima* and *Juniperus excelsa*)<sup>5, 6</sup>.



⋯ Prickly juniper scrub vegetation on mountain belt of the Sierra Arana near Deifontes (Granada, South Spain). (Copyright Javi MF, commons.wikimedia.org: CC-BY)



⋯ Berry-like orange seed cones; they are brown-red when mature. (Copyright Stefano Zerauscheck, www.flickr.com: AP)

### Importance and Usage

The prickly Juniper is suitable for cultivation as an ornamental shrub in southern Europe, where a number of cultivars, especially with more pendulous foliage, are commonly planted in gardens and parks<sup>6</sup>. Its wood is resistant and hard, highly valued for making furniture and other carpentry items<sup>2</sup>. Essential oils are extracted from the branches and leaves by destructive distillation, especially in France and Turkey<sup>6, 7</sup>. This 'oil of cade' is used for medicinal purposes<sup>2</sup>, such as to prepare **emphyreumatic** oil<sup>8</sup>. It has antiseptic and antiparasitic properties. Rectified cade oil is also used as a fragrance component in soaps, detergents, creams, lotions and perfumes<sup>9</sup>.

### Threats and Diseases

No important threats have been identified for the prickly juniper. The populations in the natural range are stable and in some areas this juniper is abundant. However, the coastal subpopulations are more scattered than the past, especially in Spain and around the Adriatic Sea, due to the impacts of urban and tourist developments<sup>2, 5, 6</sup>.



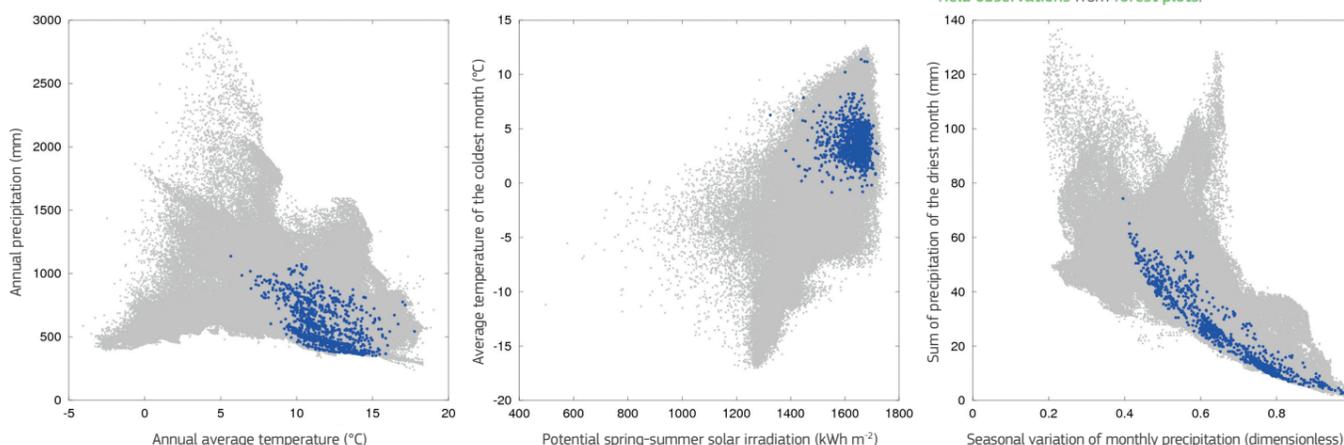
⋯ Spiny needle-like leaves with the two characteristic white stomata furrows in the upper side. (Copyright Tomás Royo, www.flickr.com: CC-BY)

### References

- [1] J. E. Eckenwalder, *Conifers of the World: The Complete Reference* (Timber Press, 2009).
- [2] A. M. Romo, *Arboles de la Peninsula Iberica y Baleares* (Planeta, Barcelona, 1977).
- [3] A. Farjon, *A handbook of the world's conifers* (Brill, 2010).
- [4] J. do Amaral Franco, *Flora Iberica: plantas vasculares de la Peninsula Iberica e Islas Baleares, Volume 1: Lycopodiaceae-Papaveraceae*, S. Castroviejo, et al., eds. (Real Jardín Botánico, CSIC, Madrid, 1998), pp. 181-188.
- [5] A. Farjon, D. Filer, *An Atlas of the World's Conifers: An Analysis of their Distribution, Biogeography, Diversity and Conservation Status* (Brill, 2013).
- [6] A. Farjon, *The IUCN Red List of Threatened Species* (2013), pp. 42243/0+.
- [7] R. P. Adams, *Biochemical Systematics and Ecology* **26**, 637 (1998).
- [8] K. Bouhhal, et al., *Parfums, cosmétiques, arômes* **83**, 73 (1988).
- [9] A. Y. Leung, S. Foster, *Encyclopedia of common natural ingredients used in food, drugs, and cosmetics* (Wiley, 1996).
- [10] J. Jalas, J. Suominen, *Atlas Florae Europaeae: distribution of vascular plants in Europe Vol. 2 Gymnospermae (Pinaceae to Ephedraceae)* (Committee for Mapping the Flora of Europe and Societas Biologica Fennica Vanamo, Helsinki, 1973).
- [11] M. Klimko, et al., *Flora - Morphology, Distribution, Functional Ecology of Plants* **202**, 133 (2007).

Field data in Europe (including absences) ● Observed presences in Europe ●

⋯ Autoecology diagrams based on harmonised field observations from forest plots.



This is an extended summary of the chapter. The full version of this chapter (revised and peer-reviewed) will be published online at <https://w3id.org/mtv/FISE-Comm/v01/e013abb>. The purpose of this summary is to provide an accessible dissemination of the related main topics.

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