

## Prunus mahaleb in Europe: distribution, habitat, usage and threats

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*Prunus mahaleb* L., commonly known as mahaleb cherry, is a shrub or small tree with white flowers, producing dark red edible plums. It is native to Central-South Europe and North Africa, extending its range up to Central Asia. It is a pioneer thermophilous plant, growing in open woodlands, forest margins and riverbanks.

Mahaleb cherry has been used for centuries for its fruits and its almond-tasting seeds inside the stone, especially in East Europe and the Middle East. More recently this plant has been used in horticulture as a frost-resistant rootstock for cherry plants. The mahaleb cherry, or St. Lucie's cherry, (*Prunus mahaleb* L.) is a deciduous shrub or small tree, reaching 10m tall. The bark is dark brown, smooth and glossy<sup>1-4</sup>. The young twigs are glandular with yellowish-grey hairs, becoming later brownish and hairless<sup>1, 3</sup>. The leaves are alternate, 4-7 cm long, broadly ovate, pointed, base rounded to almost cordate, margins finely saw-toothed, with marginal glands, glossy above and slightly hairy along the midrib beneath. The leaf petioles are 1-2 cm long, and have 1-2 nectaries. The small stipules fall off early<sup>5</sup>. The flowers are 1-1.5 cm wide, fragrant, white, on about 1 cm long pedicels, arranged in upright corymb-like raceme inflorescences of 3-12 flowers, at the tips of short, lateral, leafy shoots<sup>1, 3</sup>. The mahaleb cherry is a gynodioecious tree with individuals with functional hermaphrodite flowers and others with functional female flowers (androsterile). Pollination is driven by bees and flies<sup>6, 7</sup>. The fruits are round ovate drupes, about 0.8 cm wide, dark red, more or less bitter but pleasantly tasty. The woody stone containing the seed is smooth. This species flowers in March-June and the fruits ripen in June-September<sup>3, 6, 8-10</sup>.

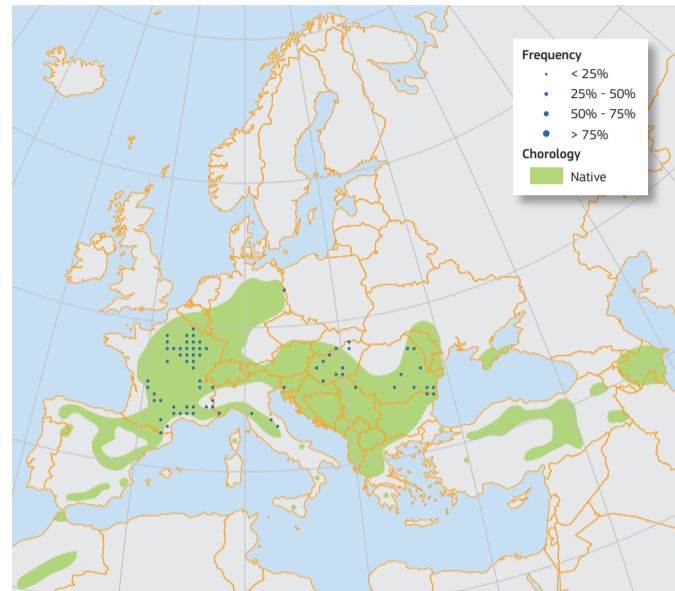
### Distribution

The natural range of the mahaleb cherry covers Central and Southern Europe, extending to Spain, and through Gibraltar to the tip of Northwest Africa, from the Balkans eastwards to Ukraine, Western and Central Asia<sup>1, 2, 11</sup>. It can be found from the lowlands to above 1000m elevations in the South Carpathians, Caucasus, and Tien Shan Mountains (Central Asia)<sup>5</sup>. It has been introduced and is considered potentially invasive in South America<sup>12</sup>, introduced, naturalised, and invasive in North America<sup>12-14</sup>, as well as Australia<sup>15</sup>, and New Zealand<sup>16, 17</sup>.

### Habitat and Ecology

The mahaleb cherry is a thermophile and pioneer species, growing on warm, sunlit and dry slopes at middle elevations. It tolerates Mediterranean and temperate dry climates with an annual precipitation of 500-600mm. It is not sensitive to frost. It grows better on calcareous soils with pH 5.5, in stony and rocky sites<sup>1, 3, 5, 18</sup>. It is slightly shade tolerant only at young stages; when mature it is a high light-demanding species<sup>5</sup>. The fruit production is controlled and proximal flowers (first to open) have advantages in maternal resource capture; the first fruits to develop have an advantage over the later developing fruits<sup>9, 10</sup>. This species thrives in open woods, at the margins of temperate oak forests, and also in bluffs and riverbanks. In the

forest edge it creates a scrub vegetation community together with other shrubby species of the genera *Rosa*, *Rubus*, *Prunus* and *Cornus*, and other thermophile shrubs such as spindle tree (*Euonymus europaeus*), hawthorn (*Crataegus monogyna*), wild privet (*Ligustrum vulgare*), etc.<sup>5, 19, 20</sup>.



Map 1: Plot distribution and simplified chorology map for *Prunus mahaleb*. Frequency of *Prunus mahaleb* occurrences within the field observations as reported by the National Forest Inventories. The chorology of the native spatial range for *P. mahaleb* is derived after several sources<sup>29-33</sup>.

### Importance and Usage

Known for its strong roots, it is used in horticulture as a frost resistant rootstock for sweet cherry (*Prunus avium*) and sour cherry (*Prunus cerasus*)<sup>11, 12, 21-23</sup>. The wood is hard, heavy, with a pleasant odour, used for carving small objects; e.g. tobacco pipes, canes, cigarette holders<sup>3, 5, 11</sup>. Its fruits are small, slightly bitter and edible<sup>23</sup>, from which a purple dye is obtained<sup>11</sup>. The seeds are used more. An aromatic spice is produced, having a taste similar to almond seeds. This spice was used for centuries in the Middle East and North Africa to flavour bread, cakes, cheese, cookies, etc.<sup>5</sup>. New studies show potential in using *Prunus mahaleb* seeds as a new edible oil source<sup>24, 25</sup>, since its seed oil contains a high level of poly-unsaturated fatty acids, especially the  $\alpha$ -eleostearic acid, a conjugated fatty acid rarely found in vegetable oils, with beneficial effects on human health<sup>24</sup>. The bark, wood, and seeds contain coumarin, making these plant parts important for their potentially anti-inflammatory, sedative and vasodilation pharmaceutical properties<sup>11, 26</sup>. As a pioneer species and due to its extensive root system the mahaleb cherry can prevent erosion and is suitable for wasteland reclamation and afforestation. It can also be used for hedging, as it tolerates cutting well<sup>5</sup>. This species has an important ecological role: birds and mammals (foxes, badgers, etc.) are frequent consumers of its fruits, promoting seed dispersion even over long distances<sup>6, 8, 12, 18, 22, 27, 28</sup>.



••• Ovate simple leaves with pointed tips and finely toothed margins. (Copyright Andrey Zharkikh, www.flickr.com: CC-BY)

### Threats and Diseases

The mahaleb cherry is susceptible to fungi such as bracket fungus (*Laetiporus sulphureus*) and witches' broom (*Taphrina cerasi*) on its trunk and branches. The rust fungus *Tranzschelia discolor* a relatively common parasite on its leaves, or *Taphrina minor* which causes shrinkage and reddish-brown discoloration of affected leaves, and *Phloeosporrella padi* causing leaf spots on infected leaves<sup>5</sup>.



••• Hermaphrodite flowers arranged in corymbs with 5 white petals and 20 stamens. (Copyright Roberto Verzo, www.flickr.com: CC-BY)

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••• Flowering shrub in spring in a hedgerow near San Lorenzo (Trieste, North-West Italy). (Copyright Stefano Zerausck, www.flickr.com: AP)



••• Bark is smooth grey-brown with horizontal strips that pull away. (Copyright Stefano Zerausck, www.flickr.com: AP)

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