Sambucus nigra in Europe: distribution, habitat, usage and threats

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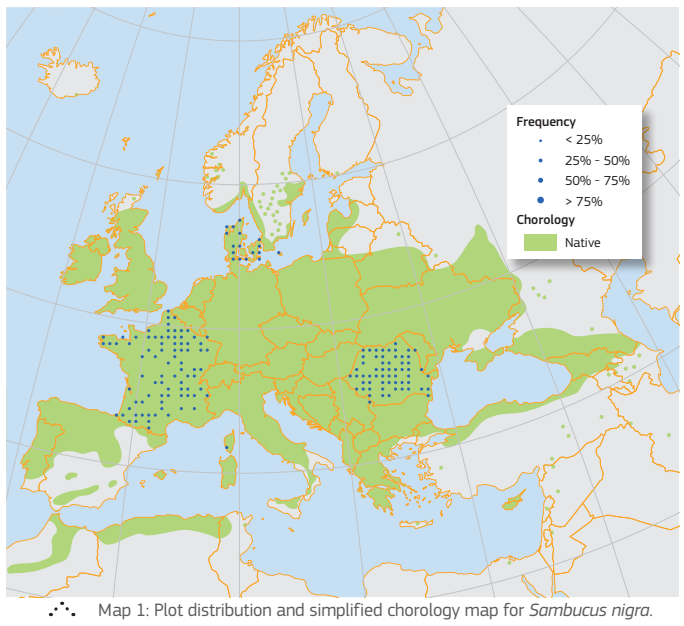
The elder (*Sambucus nigra* L.) is a deciduous shrub characterized by large white and scented inflorescences and glossy dark purple-black berries. It is common in Europe from Mediterranean regions to South Scandinavia. It is able to grow in a wide range of site conditions, generally on forest edges and open woodlands often associated to disturbed and eutrophic areas, but avoiding drought and salty soils. It is cultivated worldwide for its berries, which are used for both culinary and medical purposes.

Sambucus nigra L., also known as black elderberry, common elder or European elder, is usually a 4-5 m tall shrub or rarely a small tree, up to 10 m in height, with vigorous erect shoots, arching branches and brownish-grey and deeply furrowed bark[1, 2]. It is short-lived, rarely surviving more than 35 years[3]. Twigs are greyish, with porous-white pith and prominent **lenticels**[1]. Leaves are in opposite pairs with 3-(5-7)-9 leaflets, which are usually ovate, acuminate and with **serrate** margins[1, 2]. The leaves are mildly poisonous[1]. Flowers appear in late spring to mid-summer after leafing, usually in the third or fourth year, occasionally in the second producing flat clusters of strongly scented white or cream flowers of up to 10-20 cm in diameter[1, 4]. The fruit is a glossy dark purple-black berry, 3-5 mm in diameter, which ripens during August and September[1, 4]. Fruit and viable seed production is high every year, and the species may be propagated from seeds or cuttings. It also re-sprouts readily from stumps[1, 3, 5].



Map 1: Plot distribution and simplified chorology map for *Sambucus nigra*. Frequency of *Sambucus nigra* occurrences within the field observations as reported by the National Forest Inventories. The chorology of the native spatial range for *S. nigra* is derived after Meusel and Jäger[11].

Pedunculate inflorescence with white flowers arranged in umbel. (Copyright Tracy Houston Durrant: CC-BY)

Distribution

The elder is common in western and central Europe. Its northern limit is Scotland and southern Scandinavia, and it can be found as far south as Sicily and mainland Greece. It can also be found in Asia and North Africa (probably through cultivation), and has become naturalised in North America[1].

Habitat and Ecology

Elder is capable of growing in a broad variety of site conditions, including both wet and dry fertile soils, primarily in sunny locations and generally in the open or on woodland edges[1-3]. It is not drought tolerant, but it can cope with shade and it can also grow in relatively poor soil conditions, except in salty soils[3, 6]. It is associated with disturbed and **eutrophic** soils and can be found in floodplains, coastal scrub, on forest margins and in forest gaps, abandoned fields, in urban areas or in the underbrush layer in forests[2, 6].

Importance and Usage

The wood of the elder is white, close grained and easily worked, and is suitable for making small objects such as skewers, combs and mathematical instruments. In past years it was valued by watchmakers who would use small sticks ("pegwood") as well as the **pith** to manipulate the delicate working parts[2, 5]. Leaves, flowers and berries can all be used to produce dyes[3]. Elder is also a well-recognised medicinally important species[2, 3, 7]. Its flowers and berries are used in treating several diseases such as diabetes, colic, diarrhoea, fever, coughs, colds, congestion, bronchitis, influenza, allergies, rheumatism, swollen limbs, burns, inflamed mucous membranes[2, 3, 8]. The ripe berries can be used for making juice, jellies or wine and the flowers are used to flavour drinks[2, 3, 9]. The fruit is also an important food source for birds and other animals[3, 7]. This species is sometimes planted to control soil erosion[2] or as an ornamental shrub[10,7].

Threats and Diseases

Around 19 species of phytophagous insects are associated with elder: a relatively small number. The larvae of a number of moths including *Euproctis chrysorrhoea*, *Choristoneura hebenstreitella* and *Phlyctaenia coronata* feed in spun or rolled leaves and may defoliate the plant. Leaf spots are produced by the fungus *Cercospora depazeoides*. A number of viruses cause leaf roll or chlorotic patches[1, 3].

Black elder in the Burgwald Mountains near Wetter-Unterrosphe (Hesse, Germany). (Copyright Willow, commons.wikimedia.org: CC-BY)

Scented flowers have 5 white petals and 5 yellow stamens. (Copyright Marinella Zepigi, www.actaplantarum.org: AP)

Mature glossy dark-blue berries ripen at the end of September. (Copyright Gary Houston, commons.wikimedia.org: CC0)

References

[1] M. D. Atkinson, E. Atkinson, *Journal of Ecology* **90**, 895 (2002).

[2] T. K. Lim, *Edible Medicinal and Non-Medicinal Plants* (Springer Netherlands, 2012), pp. 30–44.

[3] D. Charlebois, P. L. Byers, C. E. Finn, A. L. Thomas, *Horticultural Reviews*, J. Janick, ed., no. 37 in Horticultural Reviews (Wiley, 2010).

[4] O. Johnson, D. More, *Collins tree guide* (Collins, 2006).

[5] C. R. Metcalfe, *Kew Bulletin* **3**, 163 (1948).

[6] F. Clinovschi, *Dendrologie* (Editura Universitatii Suceava, 2005).

[7] C. Cumo, *Encyclopedia of Cultivated Plants: From Acacia to Zinnia* (ABC-CLIO, 2013).

[8] A. M. Gray, Y. H. A. Abdel-Wahab, P. R. Flatt, *The Journal of Nutrition* **130**, 15 (2000).

[9] V. Schmitzer, R. Veberic, A. Slatnar, F. Stampar, *Journal of Agricultural and Food Chemistry* **58**, 10143 (2010). PMID: 20735034.

[10] C. E. Finn, A. L. Thomas, P. L. Byers, S. Serçe, *HortScience* **43**, 1385 (2008).

[11] H. Meusel, E. Jäger, eds., *Vergleichende Chorologie der Zentraleuropäischen Flora - Band I, II, III* (Gustav Fischer Verlag, Jena, 1998).

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