

Cornus sanguinea in Europe: distribution, habitat, usage and threats

I. Popescu, G. Caudullo, D. de Rigo

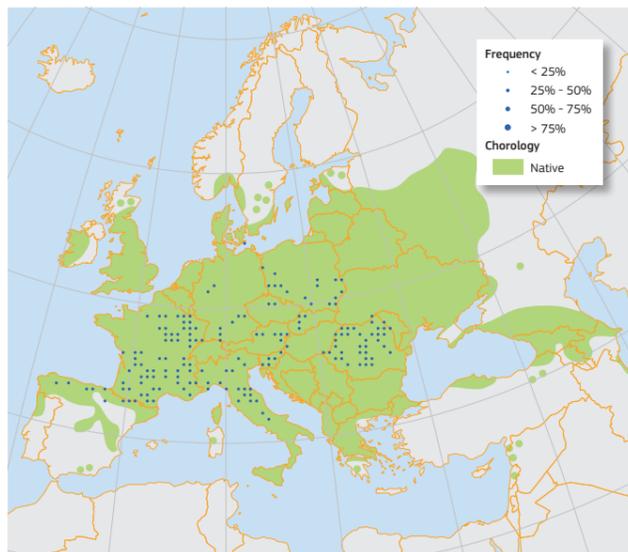
The common, or red, dogwood (*Cornus sanguinea* L.) is a deciduous shrub of cool temperate climates. It is commonly present in most of Europe and West Asia in broadleaved forests as an understory shrub or in fringes and glades. It grows in different types of soils and conditions, reproducing by seed and also propagating by adventitious roots. Thanks to its abundance of white inflorescences, its purplish red autumn leaves and the winter bright red twigs, it is cultivated as an ornamental plant. Its purplish-black fruits contain seeds rich in fat and are used to make soap and oil for illumination.

Description

Cornus sanguinea L., known as common or red dogwood, is a deciduous shrub, which usually grows 3-4 m in height, but it can develop into a small tree reaching 6 m especially in southern ranges¹. Young slender twigs, especially those exposed to sun, are dark red and when crushed the bark has a characteristic smell^{2, 3}. The leaves are opposite, entire, 4-10 cm long and 3-4 cm wide, broadly elliptical or ovate, hairy, and with short stalks. Their colour is pale green, turning to reddish in autumn. Leaf veins are in 3-5 pairs, arching and convergent. This species is monoecious with numerous fragrant, hermaphrodite flowers, which are dull-white or creamy-white, in 4-5 cm wide, terminal, flat-topped inflorescence on long peduncles, without involucre of bracts. There are five petals which are 4-7 mm long, lanceolate and spreading. The nectar disk is yellowish. The fruit is a globose berry-like drupe, 5-8 mm wide, initially reddish, turning purplish-black at maturity. Sometimes it presents white dots towards the tip. Flowering occurs in May-June after the leaves appear, and fruits mature in September-October²⁻⁵. Besides open pollinated sexual reproduction, it can also propagate vegetatively through adventitious roots⁵⁻⁸.

Distribution

This species is present in most of Europe and the Caucasian region, including the northern part of Iran. It is absent from Scandinavia (except in the southernmost part), from the north-eastern part of the British Islands, southern half of the Iberian Peninsula, and southern Greece^{2-5, 8}. It grows from sea level to over 1500 m in the Alps (Switzerland) and Caucasus Mountains⁹.



Map 1: Plot distribution and simplified chorology map for *Cornus sanguinea*. Frequency of *Cornus sanguinea* occurrences within the field observations as reported by the National Forest Inventories. The chorology of the native spatial range for *C. sanguinea* is derived after Liesebach and Götz⁸.

Its characteristic dark red twigs in full sun might be explained by an atypical layer of the outer bark formed at the end of each growing season, a layer which may increase the protective value of the bark against sun exposure¹³. This species can adapt its reproductive behaviour to habitat conditions, reproducing by seeds, dispersed principally by birds, or limiting the flower blossom and promoting a vigorous clonal growth¹⁴. This species is found in different mixed temperate broadleaved forests dominated by oaks (*Quercus robur*, *Quercus petraea*), limes (*Tilia* spp.), maples (*Acer* spp.), ashes (*Fraxinus* spp.), elms (*Ulmus* spp.) and hornbeam (*Carpinus betulus*), along with other mesophile shrub species, such as spindle tree (*Euonymus europaeus*), common hazel (*Corylus avellana*), black elder (*Sambucus nigra*), barberry (*Berberis vulgaris*)¹⁵.

Importance and Usage

This shrub is principally cultivated as an ornamental species for its small white flowers arranged in dense clusters blossoming in spring, its purplish red autumn leaves, and its bright-red winter twigs^{3, 6-8}. Different cultivars have been selected, such as 'Midwinter Fire' and 'Winter Flame', with winter stems yellow at the ground level changing to orange and red at the top, or 'Compressa' developing as dwarf form^{16, 17}. It can be used in shelter-belts against wind and is frequently planted in the understory¹⁸. Like other dogwood species, the wood is tough, hard and elastic. It is difficult to work and needs to be dried slowly to avoid cracks¹⁹. It is used only by craftsmen for making small objects, such as tool handles. The flexible twigs can be used as wickers for basket making or for fishing nets^{4, 5, 20-23}. The fruits are not toxic and have high concentration of vitamin C; however they have an unpleasant taste. They can be used for producing jams and juices¹. Its seeds contain 30% fats and can be used to make soap, or for oil in gas lamps³⁻⁵. Recent research on the antioxidant activity of leaf and fruit extracts have found an important use in areas of medical botany and pharmacology against multi-drug resistant human pathogens^{24, 25}. This species



Leaves are 4-10 cm pale green, turning reddish in autumn. (Copyright Stefano Zerausck, www.flickr.com: AP)

has an important ecological significance in forest habitats, offering flowers to insect pollinators⁸, fruits to birds and creating understory habitat for a variety of organisms^{6, 7, 26, 27}.

Threats and Diseases

There are no serious pest or disease problems recorded for the common dogwood. Ornamental plants can be prone to attack by anthracnoses or fungi, which reduce their vigour, but do not cause significant damage^{6, 7}.

References

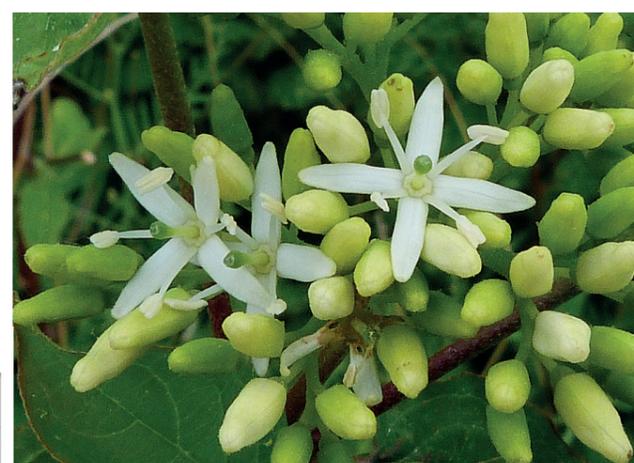
- [1] P. Schütt, U. M. Lang, *Enzyklopädie der Holzgewächse: Handbuch und Atlas der Dendrologie*, A. Roloff, H. Weisgerber, U. M. Lang, B. Stimm, P. Schütt, eds. (Wiley-Vch Verlag, Weinheim, 1994), vol. 3.
- [2] P. W. Ball, *Flora Europaea, Volume 2: Rosaceae to Umbelliferae*, T. G. Tutin, et al., eds. (Cambridge University Press, 1968), pp. 77-80.
- [3] O. Johnson, D. More, *Collins tree guide* (Collins, 2006).
- [4] O. Polunin, *Flowers of Europe: A Field Guide* (Oxford University Press, 1969).
- [5] T. Săvulescu, ed., *Flora Republicii Populare Române, vol 6* (Editura Academiei Române, București, 1958).
- [6] S. Morgan, *Horticulture Week* pp. 18-19 (2007).
- [7] M. Kimberley, *Horticulture Week* pp. 22-23 (2012).
- [8] H. Liesebach, B. Götz, *Silvae Genetica* **57**, 291 (2008).
- [9] H. Meusel, E. Jäger, eds., *Vergleichende Chorologie der Zentraleuropäischen Flora - Band I, II, III* (Gustav Fischer Verlag, Jena, 1998).
- [10] M. Aránzazu Prada, D. Arizpe, *Riparian Tree and Shrub Propagation Handbook: An Aid to Riverine Restoration in the Mediterranean Region* (Generalitat Valenciana, Valencia, 2008).
- [11] J. Kollmann, S. A. Reiner, *Flora* **161**, 191 (1996).
- [12] B. Jelínek, L. Úradníček, *European Countryside* **6** (2014).
- [13] E. Myšková, *International Journal of Plant Sciences* **175**, 328 (2014).
- [14] B. O. Krüsi, M. Debussche, *Oecologia* **74**, 592 (1988).
- [15] U. Bohn, et al., *Karte der natürlichen Vegetation Europas, Map of the Natural Vegetation of Europe* (Landwirtschaftsverlag, 2000).
- [16] E. Gossler, M. Gossler, R. Gossler, *The Gossler Guide to the Best Hardy Shrubs* (Timber Press, 2009).
- [17] J. Gardiner, *The Timber Press Encyclopedia of Flowering Shrubs* (Timber Press, UK, 2014).
- [18] P. Hanelt, ed., *Mansfeld's Encyclopedia of Agricultural and Horticultural Crops* (Springer, 2001).
- [19] M. Goldstein, G. Simonetti, M. Watschinger, *Alberi d'Europa* (A. Mondadori, 1995).
- [20] M. Oskay, D. Oskay, F. Kalyoncu, *Iranian Journal of Pharmaceutical Research* **8**, 293 (2009).
- [21] W. J. Bean, *Trees and Shrubs Hardy in the British Isles Volume 1: A-C* (John Murray, 1970), 8th edn.
- [22] G. Nieto Feliner, *Flora Iberica: plantas vasculares de la Península Ibérica e Islas Baleares, Volume 8 Haloragaceae-Euphorbiaceae*, S. Castroviejo, et al., eds. (Real Jardín Botánico, CSIC, Madrid, 2007), pp. 135-138.
- [23] W. A. Out, *Environmental Archaeology* **13**, 1 (2008).
- [24] M. S. Stanković, M. D. Topuzović, *Acta Botanica Gallica* **159**, 79 (2012).
- [25] M. M. Özcan, et al., *Grasas y Aceites* **60**, 147 (2009).
- [26] J. Kollmann, P. J. Grubb, *Ecological Research* **14**, 9 (1999).
- [27] A. Hernandez, *Bird Conservation International* **19**, 224 (2009).



Ornamental plant with bright coloured winter stems. (Copyright je_wyer, www.flickr.com: CC-BY)

Habitat and Ecology

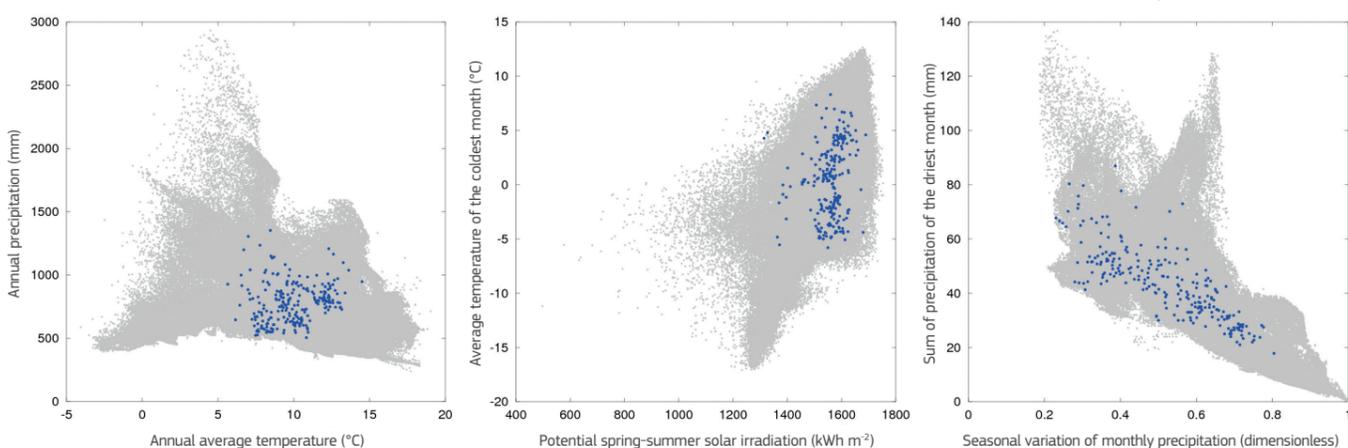
The common dogwood requires cool temperate environments, growing predominantly in sub-Mediterranean and sub-oceanic climates, but penetrating also in more continental and Mediterranean areas¹. It occurs in deciduous forests in the understory and in the fringes and glades. In the Mediterranean zones it finds refuge in shady areas, river banks and humid thorny thickets^{3, 4, 10}. It prefers consistently moist, well-drained soils, but it grows in a wide range of soils, from dry to humid with different pH levels^{6, 7, 10}. It thrives in full sun, tolerating also shade^{11, 12}.



Flowers have 4 creamy white petals and 4 stamens and are arranged in flat-topped inflorescences. (Copyright Stefano Zerausck, www.flickr.com: AP)

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/e019631>. The purpose of this summary is to provide an accessible dissemination of the related main topics.

This QR code points to the full online version, where the most updated content may be freely accessed.

Please, cite as:

Popescu, I., Caudullo, G., de Rigo, D., 2016. *Cornus sanguinea in Europe: distribution, habitat, usage and threats*. In: San-Miguel-Ayaz, J., de Rigo, D., Caudullo, G., Houston Durrant, T., Mauri, A. (Eds.), *European Atlas of Forest Tree Species*. Publ. Off. EU, Luxembourg, pp. e019631+

