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RESEARCH ARTICLE

Global Distribution of Species of The Genus Cornus L.

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Abstract

Currently, considerable attention is being paid to the exploration and sustainable utilization of plant resources that serve as natural sources of biologically active compounds Cornus L. are of significant scientific and practical interest due to their rich content of vitamins, antioxidants, organic acids, iridoids, polysaccharides, and other valuable phytochemicals. Representatives of this genus are widely distributed across temperate and subtropical regions of the Northern Hemisphere, including Asia, Europe, and North America. This paper reviews the taxonomy, geographical distribution, and economic importance of Cornus L.

KEYWORDS

Cornaceae, Cornus L., taxonomy, geographical distribution, medicinal plants, bioactive compounds.

INTRODUCTION

Cornelian cherry (Cornus mas L.) belongs to the genus Cornus L. of the dogwood family (Cornaceae Dumort.). The family Cornaceae is distributed throughout the temperate and subtropical regions of both the Northern and Southern Hemispheres. According to the modern APG IV classification (December 2023), the family comprises three genera and 119 species: Alangium Lam. (58 species), Cornus L. (59 species), and Toricellia DC. (2 species).

Within the CIS countries, only one native genus, Cornus L. (13 species), occurs naturally, while representatives of three additional genera—Corokia A.Cunn. (corokia), Aucuba Thunb. (aucuba), and Griselinia Forst. (griselinia), comprising 28 species in total, have been introduced.

The genus Cornus L. includes approximately 60 species distributed mainly in the temperate regions of the Northern Hemisphere, with only one species occurring in South America and another in Central Africa. In the CIS, 13 species grow in the wild, while 25 species have been successfully acclimatized. The taxonomy of the genus remains controversial, as it has been divided into anywhere from four to ten subgenera, some of which are occasionally recognized as independent genera.

Species of Cornus are classified into several sections or subgenera. The dogwood species growing in Russia and Ukraine belong to five subgenera (sections): Thelycrania, Macrocarpium, Arctocrania, Cynoxylon, and Benthamia. The subgenus Arctocrania includes Swedish dogwood (C. suecica), Canadian dogwood (C. canadensis), and their spontaneous hybrid, Unalaska dogwood (Cornus ×unalaschkensis).

The subgenus Thelycrania is particularly species-rich and includes white dogwood, red-osier dogwood, root-suckering dogwood, and several other species widely used as ornamental and land-reclamation plants. White dogwood (C. alba L.) is the most widespread species within the CIS region.

The subgenera Cynoxylon and Benthamia comprise genetically related species. The subgenus Benthamia includes Japanese dogwood, or Kousa dogwood (C. kousa L.), which occurs naturally in the mountain forests of Korea and China and, within the CIS, only along the Black Sea coast of the Caucasus.

Owing to its decorative value, it is widely cultivated as an ornamental plant in humid subtropical regions (Fig. 1).

Figure 1. Flowering dogwood (Cornus florida L.) in bloom.

Flowering dogwood (Cornus florida L.) belongs to the subgenus Cynoxylon and produces a highly attractive ornamental display during its flowering period. The species is native to southern Canada and central regions of North America. Within the CIS countries, it is cultivated as an ornamental plant in Crimea and along the Black Sea coast of the Caucasus. At a university in the U.S. state of New Jersey, Cornus kousa and Cornus florida were hybridized, resulting in a group of cultivars known as Rutgers dogwoods (Cornus × rutgersensis).

The subgenus Macrocarpium includes common cornelian cherry (Cornus mas), medicinal dogwood, Chinese dogwood, and sessile dogwood.

Cornus mas L. occurs naturally in central and southern Europe, including Belgium, Italy, France, Poland, the Czech Republic, Slovakia, Spain, and Bulgaria, as well as in Central Asia, northern Asia Minor, the Caucasus, Moldova, Crimea, southern Ukraine, and Russia. Distinct forms of Cornus mas have been reported in Hungary and the territories of the former Yugoslavia, while its occurrence has also been documented in northern Iran.

In Azerbaijan, diverse forms of cornelian cherry are found, with the largest natural populations recorded in the Tovuz District. In Georgia, cornelian cherry plantations have been established in the forested areas of the Khashuri, Lagodekhi, Gori, Dusheti, and Telavi districts, providing opportunities for the industrial production of aromatic juice. Large forest areas covered by cornelian cherry also occur in the Republic of Moldova, particularly in the Straseni, Orhei, Ribnita, Ungheni, and Leova districts (Fig. 2).

In Ukraine, natural populations of Cornus mas have been preserved in the Vinnytsia, Pre-Carpathian, Ivano-Frankivsk, Ternopil, Khmelnytskyi, Kirovohrad, and Cherkasy regions.

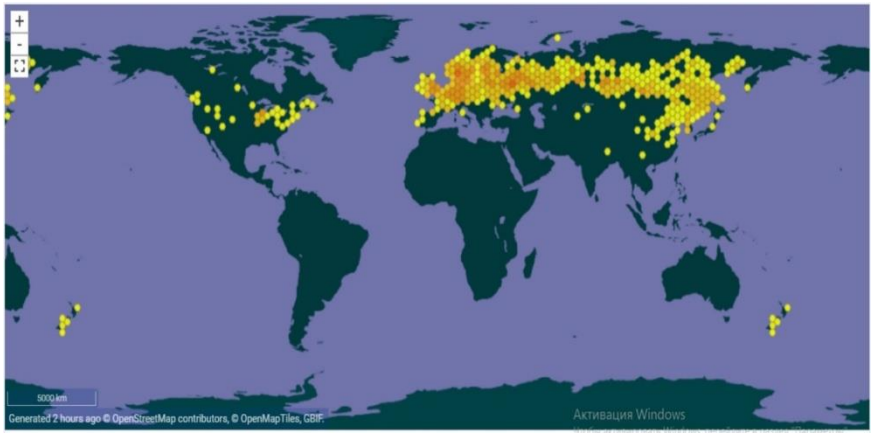

Figure 2. Geographic distribution of Cornus mas L. according to data from the Global Biodiversity Information Facility (GBIF).

In Crimea, Cornus mas occurs naturally in the areas surrounding the cities of Yalta and Alushta, as well as in the

Bakhchisaray, Simferopol, and Bilohirsk districts. The species is also widely distributed throughout the foothill and mountainous regions of the Crimean Peninsula. As a fruit-bearing tree, cornelian cherry is cultivated in Moldova, western and southern Ukraine, the Lower Volga region, and the republics of Central Asia. The cultivated range of Cornus mas is considerably broader, with its northern boundary extending through the regions of Chernihiv, Hlukhiv, Ostrogozhsk, and Volgograd (Fig. 3).

To date, the majority of cornelian cherry production is still derived from natural populations rather than from artificially established plantations. However, wild resources of Cornus mas are not stable, and both the extent of its natural habitats and their productivity have been steadily declining as a result of anthropogenic impacts.

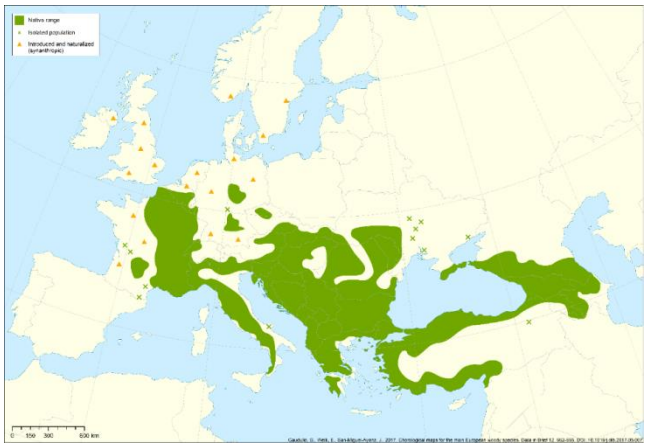

Figure 4. Distribution range of Cornus mas L.

Cornus mas is cultivated in many European countries and throughout the CIS region. According to P. M. Zhukovsky, cornelian cherry trees are widely distributed in Moldova, Ukraine, and Russia.

Cornelian cherry has been known as a cultivated plant for many centuries in the Balkan Peninsula and other parts of Western Europe. The ancient Greek scholar Theophrastus referred to cornelian cherry several times in his work Research on Plants, written more than twenty-three centuries ago. At that time, the species was already being cultivated as an agricultural crop. Two principal species of dogwood were distinguished: common cornelian cherry (Cornus mas L.) and common dogwood (Cornus sanguinea L.).

Historical records indicate that the first efforts to introduce and acclimatize cornelian cherry in Russia were undertaken during the seventeenth century under the reign of Alexis of Russia. Today, Cornus mas is valued as a medicinal, fruit-bearing, technical, and ornamental plant.

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