

NOBANIS – Invasive Alien Species Fact Sheet

Sambucus nigra

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Species description

Scientific names: *Sambucus nigra* L., Adoxaceae (Caprifoliaceae)

Synonyms: None

Common names: black elder (GB), Hollerbusch, schwarzer Holunder (DE), almindelig hylde (DK), must leeder (EE), mustaselja (FI), svartyllir (IS), juoduogis šeivamedis (LT), melnais plūškoks (LV), gewone viler (NL), svarthyll (NO), dziki bez czarny (PL), бузина черная (RU), fläder (SE), bez černý (CZ)



Fig. 1 and Fig. 2. *Sambucus nigra* shrub and flower stand, photos by Andrejs Svilāns.



Fig. 3 and Fig. 4. Flowers and fruits of *Sambucus nigra*, photos by Andrejs Svilāns. More *S. nigra* pictures may be found at [BioPix](#) or Den [Virtuella Flora](#).

Species identification

Sambucus nigra is a shrub or small tree up to 10 m high, with brownish-grey bark and white pith (Fig. 1). Stems are often with strong, erect shoots from base; branches often arching. Leaves are 20 cm in length, with 5–7 leaflets. Leaflets are 3–9 cm long, ovate, pointy, serrate and rarely pubescent beneath. Stipules are absent or very small. Inflorescence flat topped, 10–20 cm in diameter, with five primary rays (Fig. 2). Corolla is approximately 5 mm in diameter; flowers are creamish white and anthers cream (Fig. 3). Fruit a black drupe, globose, 6–8 mm, sometimes greenish-yellow, containing 3–5 seeds (Tutin *et al.* 1976, Cinovskis 1997, Fig. 4). Rubbing the leaf produces a strong odour (Hegi 1966).

Native range

Overall, limits of the *Sambucus nigra* native range are difficult to define due to its wide cultivation and naturalization since Middle Ages, and in many countries it is cultivated, but not established or being rare (Tutin 1976). *S. nigra* is a European species with an oceanic to suboceanic, cool-temperate and west-mediterranean range. The species is common in western and central Europe as well as in North Africa, Scandinavia and Great Britain. Its distribution range reaches 63° N latitude in western Norway (with scattered naturalised shrubs up to at least 68° N) and approximately 55° N in Lithuania (Fig. 5; Laiviņš 2002b, Atkinson and Atkinson 2002). The populations in the Atlas Mountains of Morocco, Algeria and Tunisia are introduced as well as that on the Azores. *S. nigra* is present in the northern and western part of the Iberian peninsula, in Sicily and mainland Greece but is absent in Crete. It occurs sporadically in western and eastern Turkey, particularly in the northern coastal strip. The eastern limit of its distribution is approximately 55° E. In mountainous regions *S. nigra* is absent from the higher altitudes, such as above 1600 m in the Alps, 900 m in the Tatra mountains, 2200 m in Morocco (Atkinson and Atkinson 2002) and 1200 m in Caucasus (Деревья и кустарники СССР 1962).

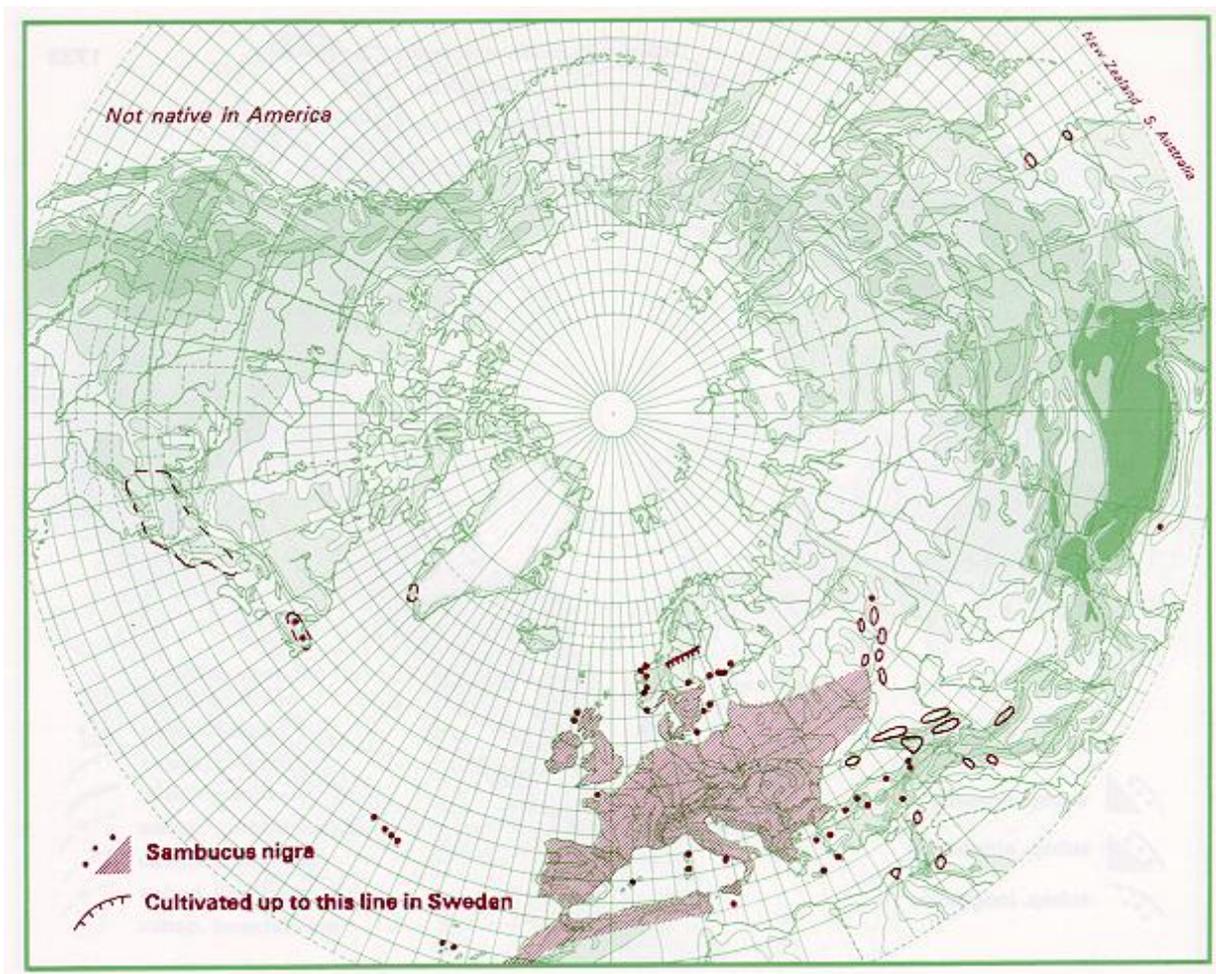


Fig. 5. The distribution of *Sambucus nigra* (Hultén and Fries 1986).

Alien distribution

History of introduction and geographical spread

Sambucus nigra has been introduced into many parts of the world including North Europe, East Asia, North America, New Zealand and the southern part of Australia (Hultén and Fries 1986, Priedītis 2002, Weber 2003). The northern range margin of *S. nigra* in Scandinavia and northern and western Europe is related to low October temperatures which can affect the maturation of seeds (Atkinson and Atkinson 2002).

In the southeast Baltic region *S. nigra* has been cultivated as a medicinal and ornamental plant since the 17th century (Kuusk *et al.* 1996, Gudžinskas 1998). In Norway *S. nigra* has probably been cultivated since the Middle Ages as medicinal plant and ornamental shrub. It was well established already in the 1870s, and is now found more or less frequently in coastal areas up to central Norway (Sør-Trøndelag) (Fremstad and Elven 1998). In Denmark, Finland and Sweden *S. nigra* was recorded before the 1700s.

At the end of the 18th century the species had already been observed in natural habitats on Estonian islands (Saaremaa Island) and in West Estonia (Fischer 1778), where it was successfully cultivated (Talts 1969). In Latvia the species was known as a garden ornamental and fruit tree perhaps including some established localities already in 18th century. Later on, occurrences of naturalised shrubs in Latvia were recorded in 1899 in the West Latvia (Kupffer 1899) and in 1895 in East Latvia (Lehmann 1895). In Lithuania the species was first recorded in 1791 (Gudžinskas 1998).

In Russia the species was first recorded in 1810 in the Moscow district (Игнатов и др. 1990).

Pathways of introduction

Sambucus nigra is grown for commercial purposes in many European countries. It has been widely cultivated for its fruits and as a medicinal plant (Tutin *et al.* 1976), as well as for ornamental purposes in parks and streets, and for erosion control at the seacoast (CABI 2004). Black elders are grown also as fruit trees a colorant for juices and home wine kits (Atkinson and Atkinson 2002).

Alien status in region

In Central Europe, *e.g.* in Poland, Germany and Austria *S. nigra* is a native species (Hegi 1966, Mirek *et al.* 2002).

In the Baltic States, scattered localities of the established populations occur throughout Latvia (more commonly in West and South Latvia) and in western Estonia (Kuusk *et al.* 1996, Laiviņš *et al.* 2009). According to Laiviņš (2002a), the climate warming and eutrophication of forest stands promote its spread over the entire territory of Latvia. In Russia *S. nigra* has been observed occasionally since the 1880's; it was cultivated as an ornamental especially in the southern districts where it is escaped and naturalised but not considered as common (Григорьевская и др. 2004, Флора европейской части СССР 1978).

The species is not considered to be native in Norway; in the southern parts it is naturalised but not very common. It is locally found naturalised along the coastline from the Swedish border in the southeast and northwards at least up to central Norway (about 63°5' N). It is most common along the south-western coast of Norway from about 59 to 63° N. It survives as planted ornamental at least north to 68° N, and may occasionally also be found naturalised up to 68° N (S. Baatvik, pers. comm.). In Iceland *S. nigra* has been cultivated as a decorative plant in gardens at least during the 20th century, but it has not been spread outside gardens (H. Kristinsson, pers. comm.). In Denmark *S. nigra* occurs in wild but is not considered invasive (J. Kollmann, pers. comm.). See also Table 1.

Country	Not found	Not established	Rare	Local	Common	Very common	Not known
Austria					Native		
Belgium					Native		
Czech republic					Native		
Denmark					X		
Estonia				X			
European part of Russia			X				
Finland			X				
Faroe Islands	X						
Germany					Native		
Greenland	X						
Iceland		X					
Ireland					Native		
Latvia			X				
Lithuania			X				
Netherlands					Native		
Norway				X			
Poland					Native		
Slovakia							
Sweden					X		

Table 1. The frequency and establishment of *Sambucus nigra*, please refer also to the information provided for this species at www.nobanis.org/search.asp. Legend for this table: **Not found** -The species is not found in the country; **Not established** - The species has not formed self-reproducing populations (but is found as a casual or incidental species); **Rare** - Few sites where it is found in the country; **Local** - Locally abundant, many individuals in some areas of the country; **Common** - Many sites in the country; **Very common** - Many sites and many individuals; **Not known** - No information was available; **Native** - When a species is native in a country this is indicated in the table under the relevant frequency category.

Ecology

Habitat description

S. nigra grows in floodplains, coastal scrub, on forest margins and in forest gaps, have spread in hedgerows, abandoned gardens and fields, around farmsteads, in urban areas and on post-industrial wastelands. The species is less common in forests, and it cannot survive under deep shade (Kollmann and Reiner 1996, Atkinson and Atkinson 2002). In central Europe *S. nigra* is not a typical forest plant, because the most important habitat factors are high light availability and nutrient-rich, neutral to basic soils.

S. nigra easily colonizes both natural forests, forest plantations and shrublands, and in most locations the species has an anthropogenic origin. It has a somewhat ruderal character, especially in disturbed sites such as abandoned fields or grasslands (Kollmann and Reiner 1996).

In its introduced range, *S. nigra* occurs mainly in anthropogenic habitats, e.g. urban areas, parks and gardens, near enclosures, farmsteads and in dunes. In cities it is found in ruderal places, unmanaged parks, for example in abandoned dumping-grounds, abandoned allotments, forest margins, railway verges and roadsides (Laiviņš 2002b). Besides habitats listed above it is common in hedgerows, scrub and forest margins (e.g. in the southern districts of Russia, Григорьевская и др. 2004). Throughout Lithuania and Denmark, *S. nigra* is found along forest margins, in pine forests, disturbed habitats, in old parks, on roadsides, along railways and near buildings (Ramanauskas 1976, Hansen 1981, Gudžinskas 1988, J. Kollmann, pers. comm.). In western Estonia *S. nigra* is found in sparse forests and grasslands (M. Leht, pers. comm.).

Reproduction and life cycle

Sambucus nigra is a perennial shrub, reproduces by seeds and vegetatively (Laiviņš 2002a). Most shrubs produce copious amounts of fruit and viable seed every year (Atkinson and Atkinson 2002). *S. nigra* usually flowers in its third or fourth year, rarely in its second (Bolli 1994 in Atkinson and Atkinson 2002). Flowering is generally in June and July (Lange *et al.* 1978). The flowers have a strong odour (Hegi 1966). This may deter some visitors, but attracts others. Beetles, particularly longhorn beetles and flies, pollinate the flowers (Westrich 1989). Most fertilization is due to pollen from different flowers or inflorescences albeit from the same individual (Atkinson and Atkinson 2002 cit. Bolli 1994). Fruits ripen in August or September (Birkmane *et al.* 1959). First reproduction is observed in four year-old bushes (Kaack 1988 in Atkinson and Atkinson 2002).

Dispersal and spread

Birds are the main dispersal agents of *S. nigra* seeds which either regurgitate or defecate the seeds after ingesting the fruit (Cinovskis 1997, Atkinson and Atkinson 2002). Black elder berries were eaten by a greater number of species than other fruit, because of their abundance, early ripening and ease of plucking (Snow and Snow 1988 in Atkinson and Atkinson 2002). It is possible that seeds are dispersed by water along watercourses, but their germination potential is unknown (CABI

2004). Seeds and plants are also sold in plant nurseries and botanical gardens and planted in gardens as ornamentals or fruit trees.

Impact

Affected habitats and indigenous organisms

In most of its alien range, *S. nigra* is not considered a problem, neither ecologically, nor for human health, the economy or society. It is not a problem in its alien range as long as it invades ruderal habitats. However, in the Baltic States it is established in semi-natural habitats, such as dry and mesophilous pine forests (Gudžinskas 1998, Laiviņš 2002a). According to research done by Kollmann and Reiner (1996), *S. nigra* has a low shade tolerance but its response to light is rather high, therefore it is more often found in open areas or woodland edges (Atkinson and Atkinson 2002) and old dry pine forests where shading is not preventing seedling establishment. However, the species is capable of establishing under a closed shrub canopy (Gilbert 1991 in Atkinson and Atkinson 2002), possibly as a result of producing leaves earlier in the season than most tree and shrub species. It often occurs in woodland margins and abandoned farmyards and can reach age of >25 years (Atkinson and Atkinson 2002).

If climate warming and environmental eutrophication continue, further spread of *S. nigra* into natural habitats, for example sparse forests, is to be expected (M. Laiviņš, pers. comm.). Increasing abundance of *S. nigra* in natural habitats can affect their structure and related communities, for example due to increased dead litter dry open pine forest on nutrient-poor soils might turn into forests with dense shrub layer with decreased light availability and nitrophilous herbaceous vegetation.

Genetic effects

Natural *Sambucus* hybrids are very rare. The hybrids between *S. nigra* and *S. racemosa* have been reported from few locations in Denmark and Sweden (Mossberg and Steenberg 2003). This may be due to the fact that *S. racemosa* normally flowers several weeks earlier than *S. nigra* (Atkinson and Atkinson 2002).

Human health effects

The flowers, fruits, leaves, bark and roots of *S. nigra* can be used for medical purposes. The medicinal properties of the species are widely described. For example, dried fruits, flowers and cortex have been used as diaphoretic and diuretic medicines. Herbal tea from *S. nigra* flowers is used against fever and scarlatina. *S. nigra* bark and fruits are used in the treatment of respiratory problems (Drudze 2005).

Its leaves contain cyanogenic glycosides from which cyanide is released by enzymatic action. Although *S. nigra* is not generally considered poisonous, isolated cases of poisoning in animals and man have been reported after eating the bark, leaves, berries, roots and stems (Cooper and Johnson 1984 in Atkinson and Atkinson 2002).

Economic and societal effects (positive/negative)

There are several positive socio-economic effects from *S. nigra*, because it has a wide range of uses. It is cultivated in many European countries for elderberry production. The fruits from *S. nigra* are used for making jellies, juice and also as dyes. The flowers are used for the preparation of drinks and medicines; elderberry-flower wine is very popular in England (Drudze 2005). Extracts from *S. nigra* are used in horticulture as a repellent against insects, because of the unpleasant odour. *S. nigra* shoots are put into the soil to scare off mice and moles (Drudze 2005).

S. nigra is grown as an ornamental, recently being rare in cultivation (Gudžinskas 1998). Numerous cultivars with variegated leaves and fruits with different nutritional value are known (Gudžinskas 1998, Houtman 2004).

S. nigra has also been planted for erosion control. It is not used as a timber due to its small dimensions. However, because of its whiteness, close grain, good cutting and polishing properties, the wood is suitable for making pegs and other small wooden items. The pith from one-year-old branches is used for making plant sections in microscopy (CABI 2004).

Management approaches

Prevention methods

Since the species is not considered a problem in most of its alien range, there are current efforts regarding prevention, eradication and control or monitoring.

Eradication, control and monitoring efforts

One of the control methods for *S. nigra* is cutting and mechanical crushing. Mechanical crushing of dense scrub, in which *S. nigra* is an element, is a viable option for scrub control (Clive 1964 in CABI 2004). The chemical control has better effects on young shrubs. Low-volume applications of a new herbicide, *i.e.* 1:1-ethylene-2:2-dipyrylium dibromide, gave good effects for various tall-shrub species, including *S. nigra*, though there was basal regeneration (Brian *et al.* 1958 in CABI 2004). Regular cutting combined with herbicides is another effective method to control *S. nigra*. The combination of cutting, burning and applying a drenching spray of 2.4- + 2,4,5-T in diesel oil or diesel and sump oil, on and around the cut stumps in the winter has proven effective. There are no records of biological control being employed on *S. nigra* (CABI 2004).

Information and awareness

Not known.

Knowledge and research

Laiviņš (2002a) has investigated and described *S. nigra* plant communities in Latvia, as well as inspected the localities of *S. nigra* which are currently known in Latvia. The distribution map is published in the [Atlas](#) of Latvian Woody Plants (Laiviņš *et al.* 2009).

Recommendations or comments from experts and local communities

None.

References and other resources

Contact persons

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Links

[FloraWeb](#) (in German)

[Den](#) virtuella floran (in Swedish)

[Kew](#) Royal Botanic Gardens

Internet [Atlas](#) of Latvian Woody Plants (in English, Latvian, Russian)

[BioPix](#) (photos)

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