

# NOBANIS – Invasive Alien Species Fact Sheet

## *Amelanchier spicata*

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### Author of this species fact sheet:

Nora Kabuce, Latvian Environment, Geology and Meteorology Agency, Maskavas Str. 165, Riga, LV-1019, Latvia, Phone: +371 7032030, Email: [nora.kabuce@lvgma.gov.lv](mailto:nora.kabuce@lvgma.gov.lv) and Agnese Priede, Nature Conservation Agency, Meza maja, Kemeru, Jurmala, LV-2012, Latvia, Phone: +371 29640959, E-mail: [agnese.priede@daba.gov.lv](mailto:agnese.priede@daba.gov.lv)

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## Species description

**Scientific names:** *Amelanchier spicata* (Lam.) K. Koch, Rosaceae

**Synonyms:** *Crataegus spicata* Lam., *Amelanchier ovalis* auct. non Medik., *A. canadensis* auct. non (L.) Medik., *A. humilis* Wieg. Some American taxonomists, as Rehder (1949), consider *A. spicata* to be a hybrid of *A. canadensis* (L.) Medik. x *A. ovalis* Medik., or it is probably a hybrid between *A. oblongifolia* Roem. and *A. stolonifera* Wieg.

**Common names:** dwarf serviceberry (GB), Besen-Felsenbirne (DE), aks-bærmispel (DK), tähktoompihlakas (EE), isotuomipihlaja (FI), skógamall (IS), varpinė medlieva (LT), vārpainā korinte (LV), Krentenboompje (NL), blåhegg, junisøtmispel (NO), świdośliwa kłosowa (PL), ирга колосистая (RU), häggmispel (SE), muchovník klasnatý (CZ).



**Fig. 1.** Flowers of *Amelanchier spicata*, photo by Andrejs Svilāns.



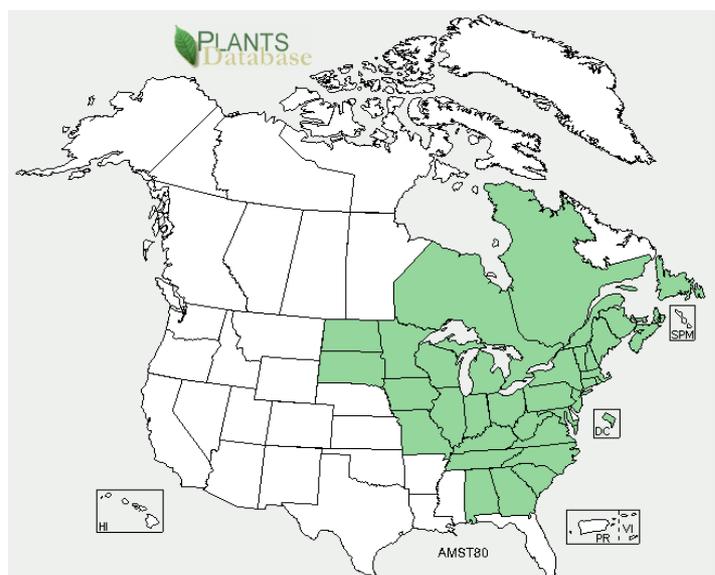
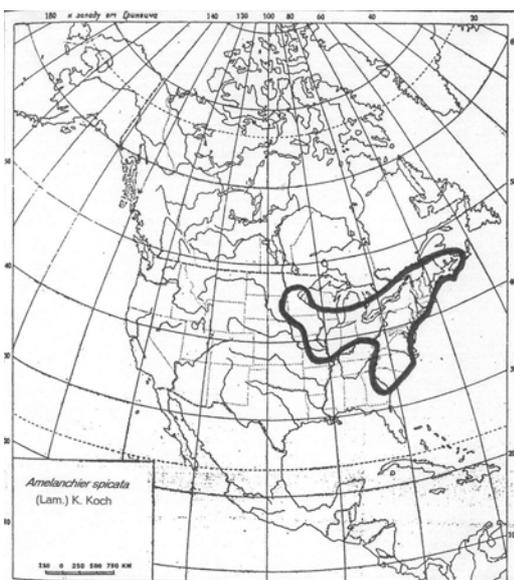
**Figs. 2 (left) and Fig. 3 (right).** Fruits and leaves of *Amelanchier spicata*, photos by Andrejs Svilāns.

### Species identification

*Amelanchier spicata* is a shrub or a small tree up to 5 m high, with brown bark. Leaves are pinnate, elliptic or oblong with rounded apex, 3 – 6 cm long, bluish green, with serrate margin. Young leaves are white tomentose beneath. Inflorescence upright, dense raceme; petals white, oblong – obovate, 4-10 mm. Chromosome number:  $2n=68$  (Tutin *et al.* 1968). Fruits are bluish black and ripen in July - August. Flowering usually takes place in the end of May (Birkmane *et al.* 1957).

### Native range

*A. spicata* is native to North America (Fig. 4 and 5) – from Newfoundland to Alabama, in the west from Missouri to Minnesota, in the south to South Carolina (Артюшенко 1959, Birkmane *et al.* 1957).



**Fig. 4 (left) and Fig. (right) 5.** Native range of *Amelanchier spicata* in North America (Артюшенко 1959, [USDA Plants Database](https://www.plantsdatabase.usda.gov/)).

## Alien distribution

### History of introduction and geographical spread

*A. spicata* is an ornamental plant, planted in windbreak belts and cultivated for use of fruits in many European countries and is often established in natural vegetation (Tutin *et al.* 1968, Kuusk *et al.* 1996). *A. spicata* is resistant to low temperatures, to about -40 to -50°C (Pīrs 2000a) and can therefore spread toward the north. The first *A. spicata* record in Denmark is from the beginning of the 1800s (H. Jørgensen, pers. comm.), in Finland from the 1800s, in Sweden and Germany from the 1900s (NOBANIS 2005). In Latvia it is known from 1896 in the Riga district. First, the collected specimen was misidentified by the botanist K. Kupffer as *A. canadensis* Medik., and, later on in the 1940s, identified correctly as *A. spicata* (Rasiņš 1972). In Lithuania and Estonia the first record of *A. spicata* dates back to 1934 (Kull *et al.* 2001). In Norway the species was probably introduced in parks near Oslo in the late 1800s, and herbarium specimens date back to at least the 1920s (Svein Båtvik, pers. comm.). In Poland the first record dates back to 1820 (Hereźniak 1992). In Russia one of the first records was from 1907 in the Moscow district (Игнатов и др. 1990).

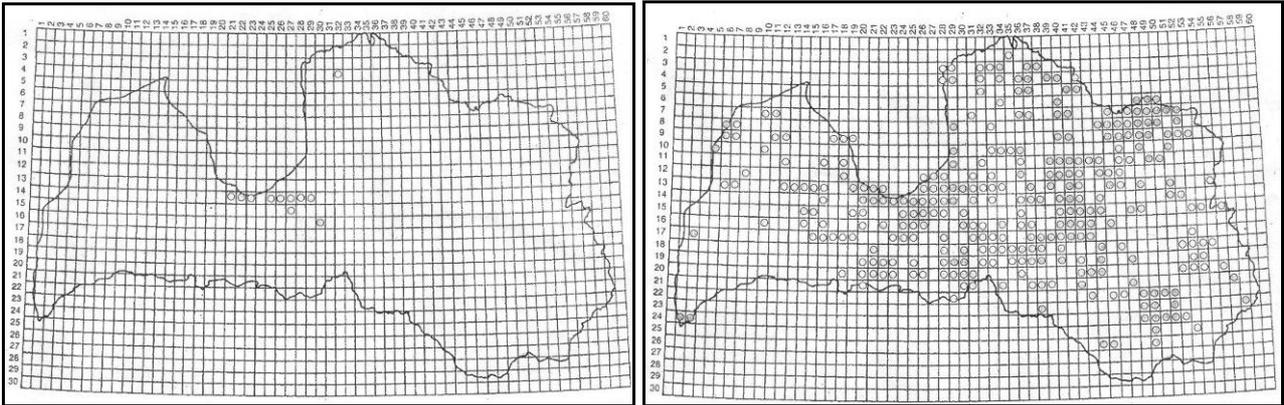
### Pathways of introduction

*A. spicata* is an example of both intentionally introduced successful invader. *A. spicata* was and still is being introduced as an ornamental tree in parks, along roads and as hedgerows and also as fruits trees. In Denmark *A. spicata* is often planted in windbreak belts and hedgerows (Peter Wind, pers. comm.). In the former Soviet Union in the 1950's the species was popularised as a useful edible plant which along with other 'useful horticultural plants' should be introduced into 'low-productivity' forests allowing natural spreading (Ieviņš 1959). Largely, the introduction of *A. spicata* and other alien shrubs in the forests failed, however, still nowadays *A. spicata* is a popular ornamental tree and is being sold in plant nurseries.

### Alien status in region

*A. spicata* is fully naturalised in Western Europe and is commonly found from England to Sweden (Binggeli 1988). It is one of the most widespread serviceberries in the Baltic countries and Russia (Pīrs 2000a), because it is very often cultivated in gardens. *A. spicata* has been naturalised in the Baltic countries for a long time (Kuusk 1996). It grows in the wild but is also often found in urban forests (Birkmane *et al.* 1957). In Latvia *A. spicata* has spread rapidly during the last 50 years and its alien range is continuously extending (Fig. 6 and Fig. 7). In Estonia *A. spicata* is naturalised with a scattered distribution being most common in southeast Estonia (Kull *et al.* 2001). In Lithuania, *A. spicata* is among the most successful plant invaders (Dobravolskaitė 2010).

In the European part of Russia it is commonly cultivated and naturalized. In Poland *A. spicata* is the most commonly cultivated species from the genus *Amelanchier* and it is often escaping from cultivation. The actual status is not known because the species is often confused with *A. canadensis* (L.) Medik. and *A. ovalis* Medik. (Mirek *et al.* 2002).



**Figs. 6 and 7.** Example of expansion of *Anelanchier spicata* in Latvia (before 1950 (left) and in 2000 (right)) (Vībāns 2001).

This species is also found in established population in Sweden, Denmark, Finland and Norway (see Table 1). The frequency of *A. spicata* is increasing in Denmark. The species is naturalised particularly on sandy soils in Western Jutland (Ødum 1968; Christiansen *et al.* 1990). In Finland Erkamo (1956) analysed the capability of woody species to regenerate by seeds and found that from the middle of the 20<sup>th</sup> century *A. spicata* has increased its distribution range. There is concern about how the rise in temperature from climate change will affect the distribution of this species (Sukopp & Wurzel 2003). In Norway the species is naturalised in forests and in rocky habitats and is now fairly common in large parts of the south-east up to 400 m altitude. In coastal areas it is found naturalised up to Central Norway (about 64°N; Lid & Lid 2005). As a garden plant, it is hardy up to at least Tromsø at almost 70°N. In Germany it is naturalised in natural vegetation such as forests and forest edges ([www.floraweb.de](http://www.floraweb.de)).

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

**Table 1.** The frequency and establishment of *Amelanchier spicata*, please refer also to the information provided for this species at [www.nobanis.org/search.asp](http://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

In its native range, the typical habitats of *A. spicata* are rocky and gravelly river banks and slopes, dry pine forests, sands and calcareous rocks in the North American Atlantic Ocean coastlands and near the Great Lakes (Lange *et al.* 1978).

In Europe *A. spicata* can be found in dry pine forests, pine-oak forests, scrubby grasslands, forest edges, coastal and inland dunes, as well along railways and roadsides (Табака *et al.* 1988, Цвелев, 2000). *A. spicata* is able to grow in various soils and is tolerant to wide ranges of soil pH (Pīrs 2000b). *A. spicata* is a moderately light demanding species, but can also grow in shaded areas. According to research done by Rūrāne (2004) in Latvia, the distribution of *A. spicata* is largely related to the degree of soil eutrophication, therefore often the presence of *A. spicata* in pine forests indicates strong eutrophication of soil (Laiviņš 1998). In Denmark *A. spicata* has spread to heathlands, oak coppices, margins of plantations, road and railway verges and similar dry, nutrient poor sites (P. Wind, pers. comm.).

### Reproduction and life cycle

*A. spicata* is a perennial shrub or tree and reproduces both by seeds and vegetatively by rhizomes (Lange *et al.* 1978). It is pollinated by a wide array of insects, mostly by bees (Pīrs 2000b). It flowers in May and its fruit ripen in July and August (Lange *et al.* 1978). *A. spicata* produces fruits in its 3<sup>rd</sup> – 4<sup>th</sup> year of growth and production can continue for 50 – 70 years (Pīrs 2000b).

### Dispersal and spread

Small mammals, birds and spread the seeds by eating the fruits of *A. spicata* (Birkmane *et al.* 1957). Furthermore, *A. spicata* spreads vegetatively and forms dense stands in pine forests and the surroundings of settlements (Rūrāne 2004).

## Impact

### Affected habitats and indigenous organisms

In the Baltic countries *A. spicata* is invading coniferous, predominantly dry to mesic pine forests, coastal areas and wooded dunes. In habitats on nutrient-poor soils (*e.g.*, pine forests on wooded dunes, grey dunes) the species change the structure of the invaded plant communities, changes the soil nutrient content and light availability and also prohibits the regeneration and growth of the dominant tree species (Laiviņš 1998, Rūrāne 2004). The appearance and rapid dispersal of *A. spicata* in (semi)natural habitats cause significant changes also in landscape (Brigita Laime, pers. comm.). As a consequence of the invasion of *A. spicata*, over the last 10 - 20 years large parts of the formerly sparse, light pine forests in urban areas and some rural areas in Latvia have turned into forests with dense shrub cover. Similarly, a rapid invasion resulting in dense *A. spicata* shrub cover can occur after forest clear cuts, windfalls or opening gaps in forest stands.

According to Sukopp & Wurzel (2003), it may take a long time between introduction and invasion in the wild for many non-native shrubs and trees. For example *Robinia pseudacacia*, *Acer negundo*

and *Ailanthus altissima* were introduced in Europe in the 18<sup>th</sup> and 19<sup>th</sup> centuries, and it took 100 – 180 years to intensive spreading. Expansion of *A. spicata* has been progressing faster due to suitable ecological conditions and low competition from other species (Laime 2002).

In Germany *A. spicata* grows in non-natural habitats, e.g. along railways and roadsides, and in natural pine forests in northern Germany. Since it is quite rare, no negative effects have been reported yet (Frank Klingenstein, pers. comm.). The same situation is found in Russia: despite the wide range distribution *A. spicata* is not abundant and no negative impacts have been reported (Цвелев, 2000).

### **Genetic effects**

*A. spicata* hybridises with some congener species of this genus. It was formerly considered to be a garden hybrid between *A. ovalis* Medik. and *A. canadensis* (L.) Medik., but is now considered to be conspecific with *A. humilis* Wieg. from northeast North America (Tutin *et al.* 1968).

### **Human health effects**

No negative effects on human health have been reported.

### **Economic and societal effects (positive/negative)**

The increasing eutrophication, recreational pressure on forest grounds and forest disturbances particularly in urban forests promote the spread of *A. spicata* and other invasive shrubs and formation of dense shrub layer in the formerly open, light coniferous forests and forest edges. This is related not only to aesthetical changes, but also hinders the regeneration of the trees.

*A. spicata* does not cause any negative societal effects. On the contrary, *A. spicata* is decorative and is planted as an ornamental shrub in many parks, gardens and along roadsides. Furthermore, it produces delicious fruits, which are sweet and contain vitamin C and other vitamins (Birkmane *et al.* 1957).

## **Management approaches**

### **Prevention methods**

*A. spicata* has been identified as posing a potential threat to plant health, environment and biodiversity in the EPPO region. EPPO therefore recommends taking precautionary measures to prevent their further introduction and spread ([EPPO List of invasive alien plants](#)).

In the Latvian National Programme on Biological Diversity it is stated that the distribution of non-native invasive tree species (for example, *A. spicata*, *Cotoneaster lucida* and *Acer negundo*) in forests must be controlled and specific control methods in forests with high densities of invasive species must be applied ([Latvian National programme on Biological Diversity](#)).

Due to its high invasion potential *A. spicata* should be included in invasive species ‘black lists’ and cultivation should be prohibited. Since 2008 the species is on the Danish Invasive [Black](#) List.

### **Eradication, control and monitoring efforts**

One of the methods to restrict the distribution of *A. spicata* is cutting of the plants (Laime 2002). This work has to be done regularly by cutting and removing the plants while they are still in the offshoot stage. Repeated cutting must be done several times to avoid regrowth. Since the best approaches in controlling the species are not known, the eradication success must be monitored (Laime 2002).

Experimental cutting of *A. spicata* shoots were done in Lithuania (Dobravolskaitė 2010) proving that the regrowth of shoots is fast – in the next year after cutting 52% of shoots regenerated from sleeping buds and produced new shoots. In the same year 43% of new shoots raised new branches.

Each cut shoot produced 1 to 6 new young shoots, and the height of young shoots at the end of vegetative season reached up to 75 cm (Dobravolskaitė 2010). The study revealed that in pine forests the shoot number negatively correlates with the coverage of *Vaccinium myrtillus*. With increased *V. myrtillus* coverage, the number of young shoots of *A. spicata* decreased significantly (Dobravolskaitė 2010) suggesting that more disturbed forest understory promotes expansion and regrowth of *A. spicata* after cutting.

#### **Information and awareness**

Not known.

#### **Knowledge and research**

Some research about *A. spicata* distribution and eradication in Latvia has been done from 2002 – 2006 within the LIFE-Nature project “Protection and Management of Coastal Habitats in Latvia”. One of the actions here was the restoration of grey and white dunes by destruction of expansive/invasive plants ([LIFE-nature project-Latvia](#)).

#### **Recommendations or comments from experts and local communities**

None.

### **References and other resources**

#### **Contact persons**

Franz Essl (AT), Umweltbundesamt, Naturschutz, Spittelauer Lände 5, 1090 Wien, Austria  
Phone: +43- (0) 1-313 04/3323, Fax: +43- (0) 1-313 04/3700, E-mail: [franz.essl@umweltbundesamt.at](mailto:franz.essl@umweltbundesamt.at)

Filip Verloove (BE), E-mail: [filip.verloove@cepa.be](mailto:filip.verloove@cepa.be)

Frank Klingenstein (DE), Federal Agency for Nature Conservation, Konstantinstr, 110, D-53179 Bonn, Germany. Phone: +49(0)228/8491-264, E-mail: [frank.klingenstein@bfn.de](mailto:frank.klingenstein@bfn.de)

Henrik Jørgensen (DK), Danish Forest and Nature Agency, Ministry of the Environment, Haraldsgade 53, DK-2100 Copenhagen Ø, Denmark. Phone: +45 3947 2000, E-mail: [hjg@sns.dk](mailto:hjg@sns.dk)

Peter Wind (DK), Aarhus University, National Environmental Research Institute, Department of Wildlife Biology and Biodiversity, Grenåvej 14, 8410 Rønne, Denmark. Phone: +45 8920 1544, E-mail: [pwi@dmu.dk](mailto:pwi@dmu.dk)

Merike Linnamägi (EE), Estonian Ministry of Environment, Nature Conservation Department, Narva mnt 7a, 15172 Tallinn, Estonia. E-mail: [merike.linnamagi@envir.ee](mailto:merike.linnamagi@envir.ee)

Jóhann Pálsson (IS), Logafold 88, IS-112 Reykjavík, Iceland. E-mail: [jop@simnet.is](mailto:jop@simnet.is)

Andrejs Svilāns (LV), National Botanic Garden, Dendroflora Department, Miera 1, LV- 2169, Salaspils, Latvia. E-mail: [andrejs.svilans@nbd.apollo.lv](mailto:andrejs.svilans@nbd.apollo.lv)

Brigita Laime (LV), University of Latvia, Department of Botany and Ecology, Kronvalda bulv. 4, Rīga, LV-1586, Latvia. E-mail: [laime@lanet.lv](mailto:laime@lanet.lv)

Svein Båtvik (NO), Directorate for Nature Management, N-7485 Trondheim, Norway. Phone: +47 73 58 05 00. E-mail: [svein-t.batvik@dirnat.no](mailto:svein-t.batvik@dirnat.no)

Damian Chmura (PL), Institute of Nature Conservation, Polish Academy of Sciences, 33 Mickiewicza Str., PL-31-120 Kraków, Poland. E-mail: [chmura@iop.krakow](mailto:chmura@iop.krakow)

Melanie Josefsson (SE), Swedish Environmental Protection Agency, c/o Dept of Environmental Analysis, SLU, P.O. Box 7050, SE-757 55 Uppsala, Sweden. Phone: +46 18 673148, Fax: +46 18 673156, E-mail: [Melanie.Josefsson@snv.slu.se](mailto:Melanie.Josefsson@snv.slu.se)

Olga Morozova (RU), Institute of Geography, Russian Academy of Sciences, Laboratory of Biogeography, Staromonetny, 29, Moscow, RU-119017, Russia. E-mail: [biogeo@igras.geonet.ru](mailto:biogeo@igras.geonet.ru)

## Links

[Den](#) virutella floran – in Swedish

[USDA](#) Plants Database

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

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