

Prunus spinosa in Europe: distribution, habitat, usage and threats

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The blackthorn (*Prunus spinosa* L.) is a spiny, deciduous shrub which produces small, purple, edible plums. This species occurs mostly from south-central Europe up to southern Scandinavia, and eastwards to Asia Minor, growing in forest margins and open woodlands as part of Mediterranean thermophilous plant communities. It is cultivated as an ornamental plant and for fruit production, used to make jams, wine, vinegar and distillates. The blackthorn has no important threats, but it can be a natural host and potential reservoir of diseases affecting production of economically important fruits, such as apricots, plums, peaches and apples.

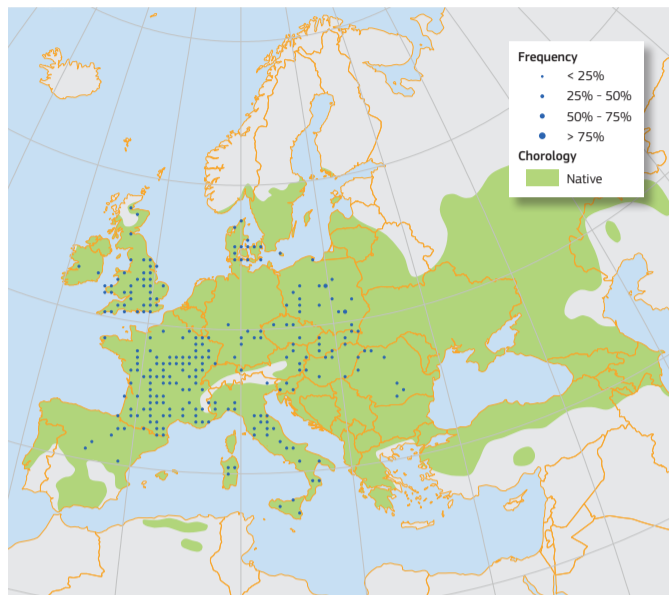
The blackthorn, or sloe, (*Prunus spinosa* L.) is a spiny, deciduous shrub, growing 1–5 m tall. It forms a dense canopy with intricate branches and numerous suckers^{1–4}. Secondary twigs often transformed into a spine, initially velvety soft, reddish-brown. The buds are globular oval, reddish-brown, more or less hairy. The bark is dark grey to blackish, slightly grooved. The leaves are alternate, 2–5 × 1–2 cm long, **obovate** to **oblanceolate**, or elliptical, with margins finely toothed, dull green in colour and hairless above, usually hairy on the veins underneath^{1, 3}. The petioles are 0.2–1 cm long, often hairy. The **stipules** are elongate, glandular, toothed, and usually longer than **petioles**³. The flowers are white, 1–1.7 cm wide, usually solitary, appearing before leaves, numerous, on about 0.5 cm long **pedicels**^{1–3}. The **sepals** are triangular-ovate, often glandular toothed. Petals have a short claw (a thinner part at the base of the petal). The stamens are usually 20, about 0.5 cm long. The **anthers** are yellow or red³. The fruit is 1–1.5 cm **drupe**, globose, purple covered with a frostlike bloom, ripening bluish-black, pulp greenish, sour and astringent, not easily detaching from the **endocarp**. This species flowers in March–May. The fruits ripen in late summer and autumn, and are sometimes persistent on the plant through winter^{1–3, 5}.

Distribution

This species occurs in most of South-Central Europe, except the lower half of the Iberian Peninsula, extending northwards to the southern part of the Scandinavian Peninsula. Eastwards it reaches Asia Minor, Caucasus and the Caspian Sea. There are also isolated populations in Tunisia and Algeria^{1, 6}. It has been introduced and locally naturalised in North America⁷ and New Zealand⁸. It grows from lowlands to 1600 m on Southern Alps (Switzerland)^{6, 9}.



Spiny branches with fruits in autumn. (Copyright Giovanni Caudullo, CC-BY)



Map 1: Plot distribution and simplified chorology map for *Prunus spinosa*. Frequency of *Prunus spinosa* occurrences within the field observations as reported by the National Forest Inventories. The chorology of the native spatial range for *P. spinosa* is derived after several sources^{6, 27–31}.

Habitat and Ecology

The blackthorn occurs in forest margins and openings, on sunny, rocky slopes, ravines, river valleys, in meadows and pastures from low elevations to the mountains^{1, 2, 10}. It is one of the main species of scrub, a belt of shrubs adjacent to the forest, in the **ecotone** between woodland and grassland communities^{11, 12}. These Euro-Siberian and Mediterranean **thermophilous** communities (class *Rhamno-Prunetea*) are dominated by thorny and spiny, scrambling shrubs, developing in **mesic** to dry soils at the edges of oak and beech forests or on river banks with willows and poplars. Rarely are scrubs natural and permanent, more commonly they are secondary vegetation developing on disturbed sites or stages of secondary succession in abandoned meadows or pastures at the borders of the agricultural landscape. The blackthorn is commonly found with other shrub species of the genera *Rosa*, *Rubus*, *Prunus* and *Cornus*, as well as with spindle tree (*Euonymus europaeus*), hawthorn (*Crataegus monogyna*), wild privet (*Ligustrum vulgare*), etc.^{10, 13–16}.

Importance and Usage

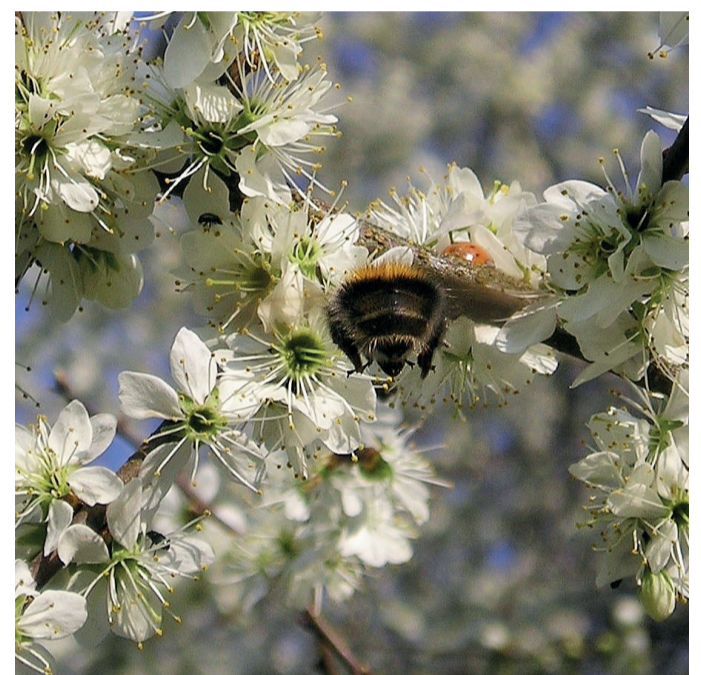
As with most *Prunus* species, the blackthorn has a high level of hybridisation and crossed with European plum (*Prunus domestica*) it forms the hybrid *Prunus x fruticans*. This species is considered one of the progenitors of the cultigen European plum together with cherry plum (*Prunus cerasifera*)¹⁷. Fully ripe fruits even though astringent are edible, and mainly used to make jams, jellies, preserves, wine, vinegar, and distilled alcoholic beverages, or as ingredients of various pastries. Flowers and petals in particular are used medicinally as tea, syrup, fresh juice or tincture to fight diarrhoea, anaemia, and other ailments^{3, 5}. Due to their vitamin C and the phenolic acids content, the fruits can be a valuable source of natural antioxidants¹⁸. The blackthorn is used as an ornamental tree, often as hedges^{3, 9, 10, 13}. It is also an important plant for wildlife, its early spring flowers provide nectar for early pollinators, its branches create a spiny thicket, providing secure nesting for birds and protection and food for small mammals^{13, 19, 20}. In temperate oak forests, its dense and thorny canopy is difficult to penetrate by large herbivores. Together with other scrub species, thorny shrubs can protect young palatable seedlings, such as oak seedlings, against browsing along the forest edges and clearings^{21, 22}.

Threats and Diseases

Despite being a member of the *Prunus* genus, the blackthorn has no important threats. It can be a natural host and potential reservoir of diseases affecting production of economically important fruits, such as apricots, plums, peaches and apples, and tests have revealed that the presence of wild blackthorns nearby could be the cause of increased presence of fruit viruses (e.g. Sharka, dwarf virus, necrotic ring spot virus, chlorotic leaf spot virus) and fungi (e.g. *Taphrina pruni*)^{23–26}.



Purple globose drupes covered with a frostlike bloom. (Copyright Phil Sellens, www.flickr.com: CC-BY)



Hermaphrodite flowers appear in spring and have 5 white petals with 20 stamens. (Copyright Maja Dumat, www.flickr.com: CC-BY)

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