



Inspiring4Biodiversity

The value of native tree and shrub species to biodiversity



Erasmus+

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The topic of planting trees on non-forest land, for example as part of urban greenery, is a rapidly growing trend. The public, civil society organizations and the public administration are developing initiatives for the planting of residential greenery, with the aim to beautify premises and, above all, to adapt to climate change. More general (or may be deeper) intent is to complement trees and shrubs where we feel they are missing or could be useful to us as part of the environment in which we live.

The benefits of greenery in settlements, if trees are planted properly, are indisputable. Greenery regulates the local climate and its ability to cool the environment is growing in importance. Trees and shrubs absorb carbon dioxide from the atmosphere and release oxygen. They protect us from noise and create visual barriers, trap dust particles and also various organic pollutants. They excrete substances beneficial to our health. They are an important part of the aesthetics of outdoor spaces. Their significance for humans is therefore many-sided and generally irreplaceable. This claim is somewhat hazed by the fact that pollen from several tree species can cause allergies – for example, birch, hazel, ash, sycamore, oak and various non-native conifers, including thuja, juniper and cypress belong here.

Another question – how do planted trees relate to other species of plants and animals in their vicinity? What if we plant our native Norway maple instead of the non-native sycamore tree? What is the importance of woody plants for local biodiversity?

Native plant species are those that occur naturally in a region – for example, they have developed here, or they have spread naturally to the area with a changing climate after the retreat of glaciers. These species are the ecological foundation on which the life stands. Without them, and without the many insect species that have evolved along with the plants, bird species would not survive, among other things. For example, an incredible number of several hundred insect species related to the oak species, including many kinds of caterpillars. Therefore, for example for birds, the oak canopy is an important source of food. One great tit chick can consume up to 100 caterpillars a day. A suitable environment with sufficient food is for the life of tits and other songbirds crucial. For comparison, sycamore trees often planted in public greenery support life of at most several species of insects in our territory.

Planting non-native tree species is common practice. In some cases, this is a good choice due to the characteristics of the specie but does not stand well as a standard. In better case scenario it does not help nature or biodiversity much, in worse case can cause direct damage. Many of the introduced species become invasive, occupying the habitats of the native species and generally damaging natural habitats.

In this overview, 33 native species of trees and shrubs generally suitable for planting on non-forest land are introduced, for example directly in urban areas or on agricultural land. The document offers very basic information about their properties,



which can be useful when considering species for a specific habitat, i.e. the size of a mature tree or its relation to the soil characteristics and climate. This information is crucial when selecting species. Information about known relationships to other groups of animals, plants and fungi, in turn, indicates the relationship to the surrounding biodiversity. The aim of the document is to draw attention to the interconnectedness of nature and the possibilities of our choice – by selecting a tree or a shrub we will influence much more than we currently know.

The list of species (alphabetical order):

- [Ash](#) (*Fraxinus excelsior*)
- [Aspen](#) (*Populus tremula*)
- [Beech](#) (*Fagus sylvatica*)
- [Bird cherry](#) (*Prunus padus*)
- [Black elder](#) (*Sambucus nigra*)
- [Blackthorn](#) (*Prunus spinosa*)
- [Cornel](#) (*Cornus mas*)
- [Dog rose](#) (*Rosa canina*)
- [Dogwood](#) (*Swida sanguinea*)
- Elms: [field elm](#) (*Ulmus minor*), [white elm](#) (*Ulmus laevis*) and [wych elm](#) (*Ulmus glabra*),
- [Fly honeysuckle](#) (*Lonicera xylosteum*)
- [Goat willow](#) (*Salix caprea*)
- [Guelder rose](#) (*Viburnum opulus*)
- Hawthorns: [common hawthorn](#) (*Crataegus monogyna*) and [woodland hawthorn](#) (*Crataegus laevigata*)
- [Hazel](#) (*Corylus avellana*)
- [Hornbeam](#) (*Carpinus betulus*)
- Lindens: [small-leaved linden](#) (or small-leaved lime) (*Tilia cordata*) a [large-leaved linden](#) (or large-leaved lime) (*Tilia platyphyllos*)
- [Mallow](#) (*Malva sylvestris*)
- Maples: [field maple](#) (*Acer campestre*), [Norway maple](#) (*Acer platanoides*) and [sycamore maple](#) (*Acer pseudoplatanus*)
- Oaks: [Pedunculate oak](#) (*Quercus robur*) and [sessile oak](#) (*Quercus petraea*)
- [Pear](#) (*Pyrus communis*)
- [Privet](#) (*Ligustrum vulgare*)
- [Rowan](#) (*Sorbus aucuparia*)
- [Scots pine](#) (*Pinus sylvestris*)
- [Spindle](#) (*Eonymus europaeus*)
- [White birch](#) (*Betula pendula*)



Ash (Fraxinus excelsior)



Photo credit: Pixabay

Brief characteristic:

- tree 20 – 40 m high;
- grows naturally in 3 types of environment: floodplain forests, mountain forests with suitable humidity conditions and on hills on limestone – 3 separate ecotypes of ash are distinguished;
- grows on nutritious soils, does not tolerate saline soils, is sensitive to climatic fluctuations and is not suitable for industrial environments.

Value to biodiversity:

- ash growths by early leaf fall create suitable conditions for herb stands to which a number of insect species are attached;
- the leaves feed on caterpillars of several species of butterflies and many species of moths, such as the coronet (*Craniophora ligustri*), brick (*Agrochola circellaris*), centre-barred sallow (*Atethmia centrago*) and privet hawk-moth (*Sphinx ligustri*);
- seeds are eaten by the Eurasian bullfinch (*Pyrrhula pyrrhula*), for example;
- the dead wood provides a living space for specialists in such an environment, such as the lesser stag beetle (*Dorcus parallelipipedus*).



Photo credit. Left: *Pyrrhula pyrrhula* 31, Saxifraga-Luuk Vermeer;
Right: *Dorcus parallelipipedus* 3, Saxifraga-Mark Zekhuis.

Aspen (Populus tremula)



Photo credit. Left: Pixabay, right: By AnRo [0002](#), [CC0 1.0](#).

Brief characteristic:

- medium tall tree (15 – 25 m) with a sparse irregular crown;
- sun-loving, fast-growing, surviving 150 years;
- resilient pioneer wood, tolerates various types of soils, suitable for planting reclaimed areas.

Value to biodiversity:

- aspens attract many species of insects, such as the butterflies the poplar admiral (*Limenitis populi*) and Camberwell beauty (*Nymphalis antiopa*) or the poplar hawk-moth (*Laothoe populi*);
- woodpeckers and other birds nesting in cavities of older trees;
- a popular food source for the European beaver.



Butterflies associated with poplars: the poplar admiral (left) and the Camberwell beauty (right). Photo credit. Left: *Limenitis populi* 15, Saxifraga-Jan van der Straaten; Right: *Nymphalis antiopa* 5, Saxifraga-Frits Bink.

Beech (*Fagus sylvatica*)



Photo left: By Moinats, [CC BY-SA 4.0](#); Right: By Jean-Pol GRANDMONT, [CC BY-SA 3.0](#).

Brief characteristic:

- a massive 40 – 50 m high tree;
- originally the most widespread forest tree in Slovakia, during the last 200 years largely artificially replaced by conifers;
- naturally growing forest tree, not resilient to drought, tolerates shading and creates compact canopy cover;
- due to the need for shading and sufficient moisture, planting young trees in open areas is relatively difficult.

Value to biodiversity:

- beech habitats are home to many plant and animal species as well as various species of fungi, including rare ones;
- leaves are food for many species of moths, including the barred hook-tip (*Watsonalla cultraria*), clay triple-lines (*Cyclophora linearia*) and olive crescent (*Trisateles emortualis*);
- fruits (beechmasts) for various small rodents, squirrels and birds;
- older individuals with cavities provide a habitat for many animal species bound to cavities and dead wood, such as bird species nesting in cavities, insects living in dead wood, etc.

Bird cherry (*Prunus padus*)



Photo left: pixabay. Photo right: By Anneli Salo, [CC BY-SA 3.0](#).

Brief characteristic:

- shrub or tree growing to a height of 15 m;
- the species prefers moist soils rich with humus;

Value to biodiversity:

- an important tree for wildlife, with many insect feeding on its leaves and flowers – bees, butterflies, beetles, hoverflies and others;
- the leaves are food for caterpillars of several species of moths, including the orchard ermine (*Yponomeuta padella*), brimstone (*Opisthograptis luteolata*) and short-cloaked moth (*Nola cucullatella*);
- as the name suggests, fruits are food for many birds, such as redwing, blackbird, song thrush, fieldfare, and robin, but also some mammals, such as badger, dormice, wood mouse (*Apodemus sylvaticus*), yellow-necked mouse (*Apodemus flavicollis*) etc.



Many animals favour bird cherry berries – song thrush (left) and yellow-necked mouse (right) among them. Photo credit. Left: Turdus philomelos 2, Saxifraga-Piet Munsterman; Right: Apodemus flavicollis 3, Saxifraga-Rudmer Zwerver.

Black elder (*Sambucus nigra*)

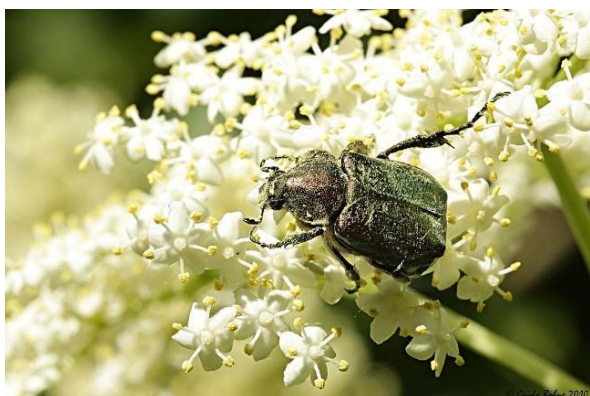


Photo credit. Left: noble chafer (Gnorimus nobilis) on black elder flowers; by gbohne,

[CC-BY-SA-2.0](#). Right: Pixabay

Brief description:

- a richly branched shrub or tree growing to 7 m at a fast rate;
- although generally undemanding, it prefers moist soil rich in humus and nitrogenous substances
- this species is sometimes planted to control soil erosion or as an ornamental shrub.

Value to biodiversity:

- a relatively small number of phytophagous insects are associated with this species; those involved include caterpillars of several moths, such as the swallow-tailed moth (*Ourapteryx sambucaria*);
- flowers provide nectar to a large number of insect species, particularly hoverflies are attracted to the flowers;
- fruits are a popular food for birds (including blackbirds and thrushes) and small mammals that disperse the seeds;
- some mammals, such as dormice (*Gliridae*) and bank voles (*Myodes glareolus*) eat both flowers and berries;

Blackthorn (*Prunus spinosa*)



Photo credit: Pixabay

Brief characteristic:

- 1 – 3 m high shrub;
- grows in sunny sites.

Value to biodiversity:

- ecologically very valuable woody plant;
- its foliage is a food plant for the caterpillars of many moths, including the sloe emperor (*Saturnia spini*), orange (*Angerona prunaria*), lackey (*Malacosoma neustria*), magpie (*Abraxas grossulariata*), swallow-tailed (*Ourapteryx sambucaria*) and yellow-tailed (*Euproctis similis*) moths. It is also the main foodplant of the

black (*Satyrium pruni*), blue spot (*Satyrium spini*) and brown (*Thecla betulae*) hairstreaks and other butterflies;

- flowers provide food for various species of insects, blackthorn is an important honey plant;
- various birds nest among the dense, thorny thickets, eat caterpillars and other insects from the leaves, and feast on the sloes in autumn.



Blackthorn is a feedplant for many moths and butterflies, including the black hairstreak (left) and sloe emperor moth (right). Photo credit. Left: Satyrium spini 5, Saxifraga-Jan van der Straaten; Right: pixabay.

Cornel (*Cornus mas*)



Photo left: By Cayambe, [CC BY-SA 3.0](#); Photo right: By Stefan.lefnaer, [CC BY-SA 3.0](#).

Brief characteristic:

- shrub or tree growing to a height of 2 – 6 m;
- grows on bushy slopes on calcareous subsoil;
- decorative appearance especially in spring – spherical shape of the canopy with yellow flowers

Value to biodiversity:

- flowers provide food for many species of insects in early spring (already in March);



- fruit is food for birds and small mammals, including squirrels;
- the canopy creates a suitable habitat for the nesting of smaller species of birds.

Dog rose (*Rosa canina*)



Photo credit: Pixabay

Brief characteristic:

- large shrub, up to a height of 3.5 m; if it grows like a liana, up to a height of 10 m;
- abundant species, grows especially in drier places

Value to biodiversity:

- flowers are an important source of nectar for pollinators;
- several moth larvae feed on the leaves, such as the common emerald (*Hemithea aestivaria*) and vapourer (*Orgyia antiqua*) moth;
- the fruit is food for bird species, e.g. common blackbird (*Turdus merula*), the redwing (*Turdus iliacus*) and other birds, but also for small mammals, such as bank voles and wood mice.

Dogwood (*Cornus sanguinea*)



Photo credit: Pixabay



Brief characteristic:

- shrub or small tree 2 – 5 m high;
- light-loving and thermophilic species;
- this shrub is principally cultivated as an ornamental species for its small white flowers arranged in dense clusters blossoming in spring.

Value to biodiversity:

- the plant develops caterpillars of several species of butterflies, the flowers provide food for pollinators and the fruits are eaten by bird species, such as the European robin (*Erithacus rubecula*) and mistle thrushes (*Turdus viscivorus*);
- creates understorey habitat for a variety of organisms.

Elms

Field elm (*Ulmus minor*)



Photo: Pixabay

Brief description:

- shrub or tree - 0.5 to 30 m;
- prefers lower altitudes, grows for example in shrub forest edges.



White elm (*Ulmus laevis*)



Photo left: By AnRo0002, [CC0 1.0](#); Photo right: By Gmihail, [CC BY-SA 3.0 RS](#).

Brief description:

- tree growing up to 35 m, long-lived;
- typical of floodplain forests, especially floodplains of larger streams.

Wych elm (*Ulmus glabra*)



Photo left: By Willow, [CC BY-SA 3.0](#); Photo right: By AnRo0002, [CC0 1.0](#).

Brief description:

- a tree growing to a height of 10 – 40 m;
- the most often grows on scree deposits of hills and mountains.

Value of elms to biodiversity:

- elm seeds are food to many bird species, squirrels and some other small mammals
- the leaves consumed by caterpillars of many moths, including the peppered moth (*Biston betularia*), light emerald moth (*Campaea margaritata*) and white-spotted pinion moth (*Cosmia diffinis*);
- the development of caterpillars of the rare white-letter hairstreak butterfly (*Satyrion w-album*) is also linked to elms.





The white-letter hairstreak butterfly caterpillar on elm leaves (left) and adult on black elder flowers (right). Photo credit. Left: Satyrium w-album 11, larva, Saxifraga-Kars Veling; Right: Satyrium w-album 10, Saxifraga-Jan van der Straaten.

Fly honeysuckle (*Lonicera xylosteum*)



Photo credit: Pixabay

Brief characteristic:

- 1 – 3 m high shrub
- Usually present in open woodlands and shrub edges, suitable for shrub layer of shrub edges;
- tolerates heavier clay soils, more often on limestone substrates.

Value to biodiversity:

- although relatively overlooked shrub, it is very valuable for other species, including rare ones;
- the flowers smell stronger at night than during the daylight attracts night butterflies – it is sought-after by the elephant hawk-moth (*Deilephila elpenor*), for example; during the day they are often visited by bumblebees;



- the leaves are eaten by caterpillars of moths and butterflies, such as the holly blue butterfly (*Celastrina argiolus*) and other species; the white admiral (*Limenitis camilla*) also associated with this plant is a species declining in several European countries;
- the leaves also attract aphids and their predators, including hoverflies, ladybirds, lacewings and some small bird species;
- the fruits are a popular food for birds, such as thrushes, bullfinches and various smaller species of songbirds;
- dormice use the bark to build nests and feed on flowers rich in nectar.



Fly honeysuckle supports many moths and butterflies, such as the white admiral (left) and the holly blue butterfly (right). Photo credit. Left: *Limenitis camilla* 6, Saxifraga-Pim Tiemens; Right: *Celastrina argiolus* 9, male, Vlinderstichting-Henk Bosma.

Goat willow (*Salix caprea*)



Photo credit. Left: By Richard Bartz, [CC BY-SA 2.5](#); right: By AnRo0002, [CC0 1.0](#).

Brief characteristic:

- 10 – 12 m high tree with a bushy crown;
- light-loving and adaptable species, suitable for relatively dry habitats.



Value to biodiversity:

- flowering catkins provide bees and other pollinators with pollen and nectar in early spring;
- an important species also for many other insect species, it is for example the food-plant for the longhorn beetle *Xylotrechus pantherinus*, or a number of butterfly species, including the purple emperor (*Apatura iris*) and the lesser purple emperor (*Apatura ilia*), etc.



The purple emperor associated with the goat willow: the caterpillar and the adult specimen. Photo right: Apatura iris 4, caterpillar, Saxifraga-Frits Bink; Photo left: Apatura iris 43, male, Saxifraga-Marijke Verhagen

Guelder rose (*Viburnum opulus*)



Photo credit. Left: By Wouter Hagens, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=1834740>. Right: Pixabay

Brief characteristic:

- 1 – 5 m high shrub, decorative;
- prefers moist soils rich in nutrients, but also grows on bushy slopes with heavier clay soils

Value to biodiversity:

- guelder rose is a foodplant for several moth species, for example for the privet hawk-moth (*Sphinx ligustri*);



- flowers provide food to pollinators, they are especially attractive for hoverflies, such as very common marmalade hoverflies (*Episyrphus balteatus*);
- berries are an important food for bird species, very popular are for example with the Eurasian bullfinch (*Pyrrhula pyrrhula*), the redwing (*Turdus iliacus*) and mistle thrush (*Turdus viscivorus*).

Hawthorns:

Common hawthorn (*Crataegus monogyna*)



Photo left: By Hans Hillewaert, [CC BY-SA 4.0](#),

Photo right: By AnRo0002, [CCO 1.0](#).

Brief characteristic:

- shrub to a small tree from 2 to 10 m high, most often spherical in shape;
- grows on different types of soils, although most often on calcareous substrates.

Woodland hawthorn (*Crataegus laevigata*)



Photo left: By AnRo0002, [CCO 1.0](#),

Photo right: By Frank Vincentz, [CC BY-SA 3.0](#).



Brief characteristic:

- shrub 2 – 4 m high, most often spherical in shape;
- strongly prefers clay and loam types of soil.

Value of hawthorns to biodiversity:

Hawthorns are impressive in terms of supporting biodiversity – both species have a positive effect on the lives of a large number of animals. For example, it provides food for more than 150 different insect species, e.g. hawthorn shieldbug (*Acanthosoma haemorrhoidale*), bumblebees, cockchafer etc.

- the flowers provide nectar to bees and other pollinators and are food for dormice;
- different species of butterflies develop on the plant, such as the swallow-tailed (*Ourapteryx sambucaria*), brimstone (*Opisthograptis luteolata*) and oak egg moth (*Lasiocampa quercus*);
- the fruit is food for birds as well as various small mammals; blackbirds and other thrushes (including redwings and fieldfares), greenfinches, yellowhammers, chaffinches, starlings, waxwings and many other birds relish the haws in autumn;
- dense and strong branches with thorns create favourable habitat for many species: small mammals, birds, lizards, insects and other invertebrates nest, roost and/or hibernate here.

Hazel (*Corylus avellana*)



Photo: Pixabay

Brief characteristics:

- shrubs or trees 3 – 8 m high;
- pioneer woody plant, resilient, tolerates pruning well.

Value to biodiversity:

- caterpillars of several species of moths develop on this plant, including the large emerald moth (*Geometra papilionaria*), small white wave moth (*Asthena albulata*) and nut-tree tussock (*Colocasia coryli*);
- flowers provide food to pollinators in early spring – the hazel is an important honey plant during this time of the year;



- the fruits (nuts) are very nutritious, various species of birds feed on them (woodpeckers, tits, jays, nuthatches, wood pigeons and others) and mammals;
- hazel has long been associated with the dormouse – known as hazel dormouse (*Muscardinus avellanarius*); this animal eats not only nutritious nuts, but also caterpillars it can find on its leaves



A number of animal species favour nutritious hazelnuts, e.g. the hazel dormouse (left) and the great spotted woodpecker (right).

Photo credit. Left: *Muscardinus avellanarius* 1, Saxifraga-Mark Zekhuis;

Right: *Dendrocopos major* 26, Saxifraga-Martin Mollet.

Hornbeam (*Carpinus betulus*)



Photo left: Pixabay. Photo right: By Ghimail – Own work, CC BY-SA 3.0 RS, https://commons.wikimedia.org/wiki/File:Carpinus_betulus_in_Vienna.jpg

Brief characteristic:

- tree 6 to 20 m (30 m) high;
- typical occurrence at low altitude in hilly areas and lowlands;
- tolerates trimming well, therefore suitable for large hedges.

Value to biodiversity:

- as in the case of beech, hornbeam growths provide a habitat for many organisms;



- the leaves are food for caterpillars of many butterfly species, including the nut tree tussock (*Colocasia coryli*);
- fruits (small nuts) are food for finches (*Fringillidae*), tits and various small mammals.

Linden trees:

Small-leaved linden (or small-leaved lime) (*Tilia cordata*)



Photo credit. Left: pixabay; Right: By Ivar Leidus, [CC BY-SA 4.0](#).

Brief characteristic:

- large tree with a regular crown, up to 30 m;
- moist and humus-rich soils are most suitable.

Large-leaved linden (or large-leaved lime) (*Tilia platyphyllos*)



Photo credit. Left: Pixabay; Right: By Gmihail – Own work, [CC BY-SA 3.0 RS](#).



Brief characteristic:

- large tree growing to a height of 25 – 35 m;
- moderately demanding on the soil quality, deep soils with sufficient nutrients are most suitable;
- popularly planted as an alley tree as well as a solitaire.

Note: The natural cross-breed between the two species mentioned above is the European linden (*Tilia x europea*). It was quite often planted along roads and as part of the city's greenery.

Value of lindens to biodiversity:

- caterpillars of many butterfly species develop on this plant, mainly a number of moth species, including the lime hawk (*Mimas tiliae*), peppered (*Biston betularia*), vapourer (*Orgyia antiqua*), triangle (*Heterogenea asella*) and scarce hook-tip (*Sabra harpagula*) moths;
- the plant is attractive to aphids, which attracts their predators – ladybirds, hoverflies and small birds;
- flowers provide food for various species of insects – lindens are important honey plants;
- larvae of several species of beetles develop in older trees and bird species nest in cavities.



The lime hawk caterpillar on linden leaves (left) and an adult male (right).

Photo credit. Left: Mimas tiliae 2, Saxifraga-Frits Bink;

Right: Mimas tiliae 6, male, Saxifraga-Marijke Verhagen.

Mallow (*Malus sylvestris*)



Photo credit. Left: Pixabay. Right: By Wehha – Own work, [CC BY-SA 3.0](#).

Brief characteristic:

- tree 10 – 12 m high, with a spherical crown;
- prefers sunny sites.

Value to biodiversity:

- can host over 90 insect species;
- the leaves are food for the caterpillars of many moths, including the eyed hawk-moth (*Smerinthus ocellata*), green pug (*Pasiphila rectangularata*), Chinese character (*Cilix glaucata*) and pale tussock (*Calliteara pudibunda*);
- the colourful flowers will attract bees and other pollinators in spring;
- many birds will feed on the fruit, particularly robins, starlings, greenfinches and thrushes; mammals, such as mice, voles, foxes and badgers, also eat crab apple fruit.

Maples:

Field maple (*Acer campestre*)



Photo credit. Left: By Willow, [CC BY-SA 2.5](#), Right: Pixabay



Brief characteristic:

- tree 10 – 15 m high with a bushy spherical crown;
- drought-resistant thermophilic species, tolerates partial shading, overall resilient and undemanding;
- tolerates pruning, therefore often used for hedges.

Norway maple (*Acer pseudoplatanus*)



Photo credit. Left: Pixabay; Right: Štefan Jančo

Brief characteristic:

- grows to a height of 30 m, or slightly more;
- primarily a mountain species, secondarily it occurs almost everywhere;
- an adult species has a large trunk and a rough bark that peels off;
- there are several varieties popular for planting in urban environments.

Sycamore maple (*Acer platanoides*)



Photo credit. Left: By AnRo0002, [CC0 1.0](#),
Right: By Włodzimierz Wysocki, [CC BY-SA 3.0](#).



Brief characteristic:

- grows to a height of 20 – 30 m;
- originally found mainly in rocky gorges and on debris, secondarily occurs also in various places affected by human activities;
- a number of varieties differing in height, leaf colour, etc. are grown, which are popular in planting in public greenery.

Value of maples to biodiversity:

- caterpillars of several species of butterflies and moths develop on the leaves, such as the sycamore (*Acronicta aceris*), plumed prominent (*Ptilophora plumigera*) and maple prominent moth (*Ptilodon cucullina*);
- maple leaves attract aphids, which in turn are food for ladybirds, predatory hoverflies and some bird species;
- the flowers provide food for bees, hoverflies (Syrphidae) and other pollinators;
- fruits (winged nuts) are eaten by birds and small mammals;

Oaks:

Pedunculate oak (*Quercus robur*)

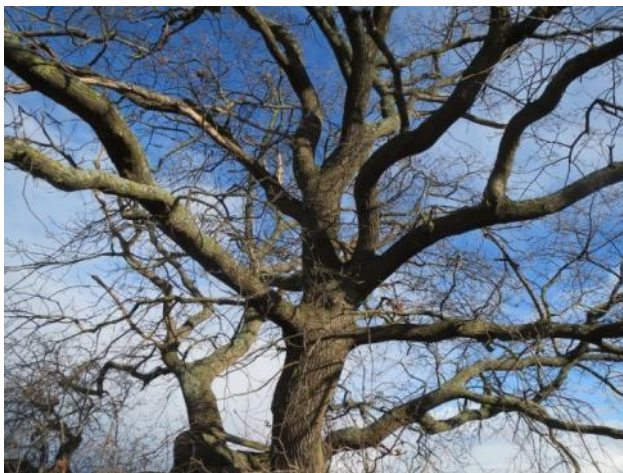


Photo: Pixabay

Brief characteristic:

- tree up to 50 m high;
- the most favourable are deep soils, but tolerates also soils rather poor in minerals;
- long-lived (500 and more years).



Sessile oak (*Quercus petraea*)



Photo left: By AnRo0002, [CCO 1.0](#); Photo right: By Nenko Lazarov, [CC BY-SA 2.5](#).

Brief characteristic:

- tree up to 20 – 40 m high;
- sun and warmth-loving species, tolerates also soils rather poor in minerals, long-lived (500 and more years).

Value of oaks to biodiversity:

- oaks are impressive in support of biodiversity – oak woods provide habitats for hundreds of species of insects;
- the leaves are food for caterpillars of many species of butterflies and moths, such as the purple hairstreak (*Neozephyrus quercus*) and oak eggar (*Lasiocampa quercus*), to name just two because of their names;
- larvae of some species of longhorn beetles (*Cerambycidae*), such as the great capricorn beetle (*Cerambyx cerdo*), *Plagionotus arcuatus*, *Pyrrhidium sanguineum*, but also the stag beetle (*Lucanus cervus*) and other insects are associated with oaks;
- acorns are eaten by a number of animals in the autumn, such as wild boars, deer, badgers, squirrels, but also jays and woodpeckers and other species;
- symbiosis with roots (mycorrhiza) is known with several fungi species of fungi, including the popular summer cap (*Boletus reticulatus*).





Some of the largest European beetles in Europe are associated with oak woods, such as the great capricorn beetle (left) and the stag beetle (right). Photo credit. Left: by Franz Xaver, [CC-BY-SA-3.0](#); Right: Lucanus cervus 44, Saxifraga-Mark Zekhuis.



The purple hairstreak (left) and oak eggar (right) associated with oaks. Photo credit. Left: Neozephyrus quercus 27, Eikenpage, Vlinderstichting-Ab H Baas; Right: Lasiocampa quercus 7, Hageheld, Vlinderstichting-Nely Honig.

Pear (*Pyrus pyraeaster*)



Photo left: By Chianti, [FAL](#), Photo right: Pixabay



Brief characteristic:

- a tree up to 20 m high, with a nice spherical crown;
- sun-loving species preferring regions with warm climate, dry-tolerant.

Value to biodiversity:

- the leaves are food for butterfly and moth caterpillars, including the rare giant emperor moth (*Saturnia pyri*);
- the flowers provide food for bees and other pollinators and the fruits are eaten by birds and various mammals.



The giant emperor moth, the largest butterfly in central Europe, associated with pear trees. Photo credit. Left: Saturnia pyri 1, Saxifraga-Marijke Verhagen; Right: Saturnia pyri 5, Saxifraga-Peter Gergely.

Privet (*Ligustrum vulgare*)



Photo credit. Left: By Andrew Butko, [CC BY-SA 3.0](#). Right: Pixabay

Brief characteristic:

- shrub hight 2 – 5 m;
- thermophilic wood, resistant to drought.



Value to biodiversity:

- its dense habit provides an ideal nesting site for several species of birds;
- the plant feeds caterpillars of several species of butterflies and moths, e.g. the privet hawk moth (*Sphinx ligustri*) and the lilac beauty moth (*Apeira syringaria*);
- flowers provide food for pollinators and, as the name of the plant suggests, the fruits feed on bird species, such as thrushes, blackbirds and waxwings.



Caterpillar and adult of the privet hawk moth. Photo credit. Left: *Sphinx ligustri* 2, Vlinderstichting-Ab H Baas; Right: *Sphinx ligustri* 10, Saxifraga-Jaap Schelvis.

Rowan (*Sorbus aucuparia*)



Photo credit. Left: By Botaurus, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=4987294>. Right: Pixabay

Brief characteristic:

- tree 3 – 12 m high, decorative;
- usually grows on nutrient-poor soils, moist to slightly dry, acidic;
- rowans are among the species that, due to their resilience and decorativeness, are relatively often planted in urban environments



Value to biodiversity:

- 160 species of insect have been recorded feeding on members of the genus – 14 of those are exclusive;
- leaves are food to several species of butterflies and moths, such as the Welsh wave (*Venusia cambrica*), autumn green carpet (*Chloroclysta miata*) and Chinese character (*Cilix glaucata*) moths;
- numerous insects, including bees and bumblebees visit the flowers in spring;
- as the name of the species suggests, the berries are a rich source of autumn food for birds, especially the blackbird, bullfinch, fieldfare, mistle thrush, redwing, song thrush, and waxwing;
- orange berries are important food also for small mammals, such as the hedgehog .

Scots pine (*Pinus sylvestris*)



Photo left: By M.Striķis, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=54903610>; Photo right: Pixabay

Brief description:

- a tree growing to a height of 40 with a trunk diameter of 1 m, but in more extreme habitats it is smaller, sometimes even shrubby;
- a sturdy pioneer wood, significantly light-loving, does not tolerate shading;
- can also grow in dry sandy soils poor in nutrients and tolerate atmospheric pollution.

Value to biodiversity:

- cone seeds are food for birds, such as include the greater spotted woodpecker, siskin, crossbill and great crested tit; small mammals, for example squirrels, also feed on the cones;
- lichens and insects colonise the tree; caterpillars of the pine hawk-moth (*Sphinx pinastri*) feed on the needles;
- the surroundings of the trees create a suitable environment for various organisms, for example some species of ants (use of needles to build an anthill), fungi (due to mycorrhiza), etc.



Spindle (*Euonymus europaeus*)



Photo left: By Franz Xaver, [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/). Photo right: Pixabay

Brief characteristic:

- shrub growing to a height of 2 – 7 m;
- light-loving, otherwise undemanding plant;
- decorative in autumn due to the colour of the fruit.

Value to biodiversity:

- the flowers are rich in nectar – food for various insects;
- foliage is eaten by various moths, for example the magpie (*Abraxas grossulariata*), spindle ermine (*Yponomeuta cagnagella*) and scorched wing (*Plagodis dolabraria*), as well as the holly blue butterfly (*Celastrina argiolus*);
- the leaves also attract aphids and their predators, including hoverflies, ladybirds, lacewings and small birds;
- the fruit is eaten by various birds, such as robins, blackbirds, blackcap, and song thrush and also rodents that disperse the seeds; even the red fox uses them as food.



White birch (*Betula pendula*)



Photo left: By Willow, [CBY 2.5](#). Foto right: Pixabay

Brief description:

- a tree growing to a height of 25 m;
- sturdy, undemanding (pioneer) tree rapidly colonising suitable open ground.

Value to biodiversity:

- ecologically very important species – the number of specialized flora and fauna species associated with birch is higher than for other tree species in Europe, particularly for mycorrhiza (symbiosis with fungi) and insects;
- the relatively open crown transmits light and creates suitable conditions for the growth of several species of mosses, grasses and various other herbs;
- the life of a large number of insect species is linked to the tree (especially to its bark and leaves); the leaves attract aphids which provide food for ladybirds and other species further up the food chain;
- among the many moths feeding on leaves are the peppered moth (*Biston betularia*), angle-shades (*Phlogophora meticulosa*), buff tip (*Phalera bucephala*), pebble hook-tip (*Drepana falcata*), and Kentish glory (*Endromis versicolora*), but also the brown hairstreak (*Thecla betulae*) butterfly;
- seeds are food for a number of small birds species, such as the goldfinch, siskin and other species;
- the trunk of the tree is used by woodpeckers and other species of birds nesting in cavities;
- the life of several species of fungi, such as the birch bolete (*Leccinum scabrum*) and the birch polypore (*Piptoporus betulinus*) are also tied to the birch;
- a widely growing root system draws otherwise inaccessible nutrients from the subsoil. After the leaf fall, these nutrients get into the surface layer of the soil – the birch thus fertilises the soil and increases the abundance and richness of soil fauna.





Mushrooms associated with the birch: the birch polypore (left) and the birch boletus (right). Photo credit. Left: *Piptoporus betulinus* 2, Saxifraga-Peter Meininger; Right: *Leccinum scabrum* 1, Saxifraga-Luc Hoogenstein.



The brown hairstreak (left), siskin (right) and lots of other animal species are attracted by birches. Photo credit. Left: *Thecla betulae* 7, male, Saxifraga-Mark Zekhuis; Right: *Carduelis spinus* 3, male, Saxifraga-Dirk Hilbers.

Useful information:

- www.botany.cz
- www.britishhardwood.co.uk
- <https://butterfly-conservation.org>
- <https://www.gardenorganic.org.uk/trees-wildlife>
- <https://lepidoptera.sk/>
- <https://pfaf.org>
- www.rspb.org.uk
- <https://www.ukbutterflies.co.uk>
- <https://www.wildlifetrusts.org>
- <https://www.woodlandtrust.org.uk>



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