

Danube Riparian Forests



Riparian Forest

Riparian forests are found in the bottomlands of larger lowland rivers such as the Danube or the Moravia. The nature of the forests is determined by the water table elevation and duration of the seasonal flooding. The river banks are mostly lined with native willow-poplar forests – so-called bottomland softwood forest. Further away from the streams, the soil is drier, the water table is deeper underground, and the flooding is less frequent. Such locations have developed into bottomland hardwood forests, comprising mainly oaks, ashes, and elms.

Riparian forests have many roles. One of them is protection from floods. They slow down the progress of the inundation wave, reduce the height of the wave and their roots prevent erosion of the banks. They slowly release the captured water into the environment, affecting the land's microclimate. Plants of the riparian forest remove excess nutrition from the water, mainly the nitrogen and phosphorus.

Riparian ecosystems had been dynamic even before the arrival of humans. Such dynamics, however, required much more space than what we have left for the contemporary riparian forests. In regions where they have persisted, we can find massive oak or poplar trees, lianas forming thick natural curtains of leaves with lots of fungi and invertebrates thriving there.

Riparian forests are fragile ecosystems. They face threats from both felling trees and planting of rapidly growing poplar plantations but also respond sensitively to the transport of water. Construction of dams, hydroelectric power stations or land drainage have resulted in the decline of these forests around many Slovak rivers. Protection of the extant riparian forests is therefore of utmost importance.



White willow

Salix alba



Typical woody plant of the longest-flooded areas of riparian forests, it can withstand even long-term inundation and has high regenerative capabilities through formation of shoots. It can be recognized by dense, velvety hairs on the lower side of the leaf and pendent branches. Besides their aesthetic value, many of the old, majestic trees of riparian forests are also of high ecological importance – they are home to many animal groups.



Crack willow

Salix fragilis



Typical woody plant of inundated areas of riparian forests, it can withstand short-term floods. Upper side of the leaf is shiny, while the lower side is grey-green, dim, with no hairs. Branches are fragile and break easily, they are not pendent. Pure-bred species are very rare, individuals cross-bred with white willow are more frequent. The species name comes from the branch characteristics, which easily break at the branching points and produce the typical cracking sound.



Silver poplar

Populus alba



A rapidly growing tree in inundated areas. The tree bark is white and grey, sometimes covered with dark traces of corky wood with tiny thickened stoma-like structures – lenticels. Leaves have white felt-like lower side and dark green shiny upper side. Dioecious plant – female and male flowers form catkins, which develop in spring before the leaves develop. Fruits are capsules, which crack and release bright brown seeds with snow-white wavy hair bundles, carried by the wind.



Black poplar

Populus nigra



Rapidly growing massive tree typical for inundated areas. Branches are first brown, then grey-green, eventually becoming black-grey. Leaves are petiolate, heart-shaped. Black poplar has become endangered, partly due to planting of the more productive poplar variants.

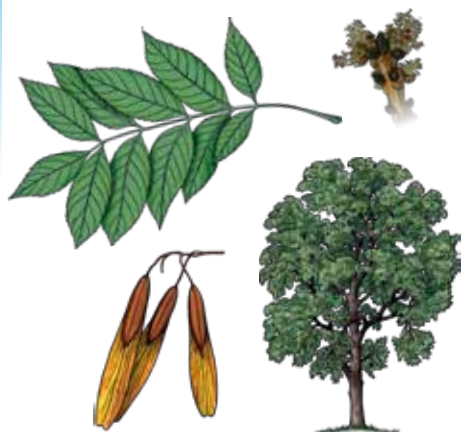


European ash

Fraxinus excelsior



Grows in the drier parts of inundated areas but also in mountains. It requires soils rich in nutrients. Buds are velvety black, flowers are arranged in branched panicle. Both species have opposite, odd-pinnate compound leaves. Fruits are ray-winged achenes attached to a thin stalk, maturing in September or October and can stay on branches until early spring.



Narrow-leaved ash

Fraxinus angustifolia



Medium to large tree with brownish grey bark, split into relatively small plates. It grows on the boundary between hard and soft floodplain forest. Found mainly in lowlands, highly represented in the Danube riparian forests. Can be distinguished by its purple-brown buds, flowers are arranged in racemes.



European white elm

Ulmus laevis



Grows in the drier parts of inundated areas and in mountain regions. Elm leaves are often asymmetrical and the leaf blade side oriented towards the top of the branch is larger and longer, which is typical for the family Ulmaceae. It can be distinguished from other elms mainly by the distinct asymmetrical shape of the leaf blade, striking venation of leaves, petiolate leaves and achenes.



Common oak

Quercus robur



Massive broadleaf tree. We can call it the king of the riparian forests. Leaves are short petiolate. Leaf edges are wavy-lobed, widest in the middle section. Fruits are acorns attached to long stalks.



Black alder

Alnus glutinosa

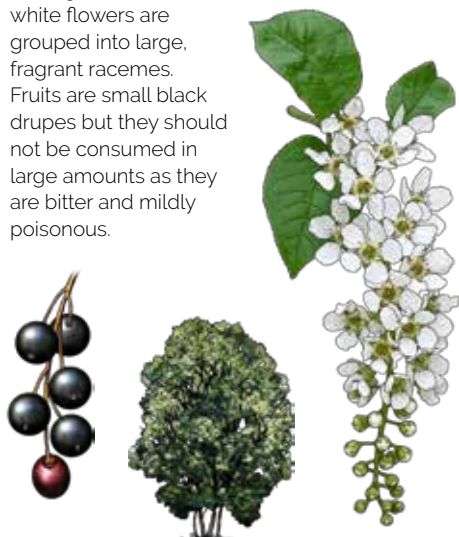
Prefers deep, wet soils with stable water table. Its Latin name refers to the young leaves, which are sticky. Fruits are typically woody, cone-like, attached to long stalks. The root system of alders carries out fixation of atmospheric nitrogen via bacterial symbiosis. Only few plants have this ability.



Bird cherry

Padus avium

Grows in riparian forests as shrub or tree, but it does not reach heights of other woody plants. It has ovate alternate leaves with fine teeth on edges. Pentamerous white flowers are grouped into large, fragrant racemes. Fruits are small black drupes but they should not be consumed in large amounts as they are bitter and mildly poisonous.



Box elder

Negundo aceroides



Invasive woody plant native to North America. It has smooth grey-brown bark. Leaves grow from branches in opposite pattern, they are odd-pinnate with 3 to 7 distinct leaflet shapes. Fruits are winged samaras. It has notable capacity of producing young shoots from roots, also spreading through large number of seeds.



Guelder rose

Viburnum opulus

Shrub with maple-like leaves. It produces beautiful white inflorescences with two types of white flowers. Central flowers are small and fertile. Outer flowers are larger, have five-fold symmetry and are sterile. Fruits are red and round and can be found on shrubs even in winter, after the leaves have shed. They are poisonous.



European buckthorn

Rhamnus cathartica

A shrub, also growing outside the riparian forests. It has toothed elliptical leaves with distinct venation. Flowers are inconspicuous, tiny and greenish. They grow in leaf axils. Fruits are black drupes used in traditional faith healing. It favourably affects metabolism but the dosage requires caution.



Wild grape vine

Vitis sylvestris



A liana growing mainly in riparian forests. Differs from the common grape vine by the width of the basal lobes of leaves, the edges are almost perpendicular to the stalk. Dioecious woody plant with striking sexual dimorphism; male individuals have leaves with deep lobes while the female individuals have shallow-lobed leaves. Berries are tiny, blue-black coloured and sour.



Common ivy

Hedera helix



Evergreen, liana-like creeping shrub. In riparian forests, it uses aerial roots to climb tree trunks to reach for light. It flowers as late as in autumn and its fruits, blue-black berries, ripen as late as the following year. They are poisonous to humans but serve as food for birds. Leaves are used for medicinal purposes.



Old man's beard

Clematis vitalba



Deciduous liana-like shrub, which climbs around other shrubs and trees in the riparian forests. It looks magnificent when in blossom as well as when the fruits ripen. Flowers are white and fragrant. Fruits – achenes – have long, hairy appendages that serve as the flying apparatus. They are aggregated in rich compound fruits and have shiny silverish colour, looking as if they were in bloom again. Despite its beauty, it belongs to poisonous plants.



Chervil

Anthriscus cerefolium subsp. *trichosperma*

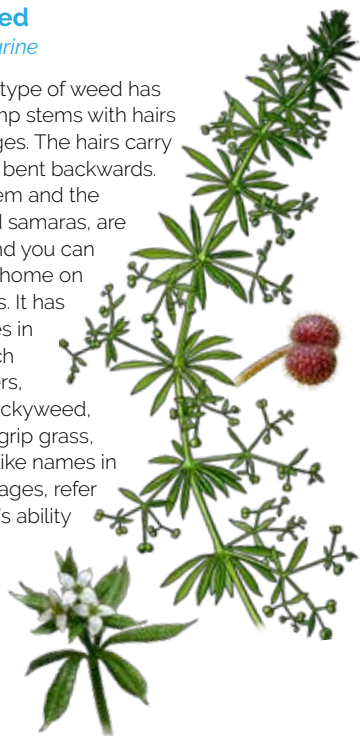
Nitrophilic species growing in fresh-humid, nutrient-rich soils. Flowering from April to July. It is an annual herb with leaf smell strongly reminding of aniseed. It is related to the parsley and is therefore also known as French parsley. It is used in traditional faith healing.



Catchweed

Galium aparine

A common type of weed has squarish, limp stems with hairs on their edges. The hairs carry fine bristles bent backwards. Both the stem and the fruits, round samaras, are adhesive and you can bring them home on your clothes. It has many names in English, such as hitchhikers, cleavers, stickyweed, sticky bob, grip grass, which, just like names in other languages, refer to the plant's ability to stick to people's clothes.



Yellow iris

Iris pseudacorus

It is one of the common species growing in wetlands. In May and June, it can be recognized by the large yellow flowers. It can grow up to 1.5 meters.



Eastern pellitory-of-the-wall

Parietaria officinalis

An inconspicuous herb, which, however, forms large growths in riparian forests or other nutrient-rich soils. Its leaves form alternating patterns with nodes carrying tiny flowers arranged in clusters. The species is native to the Mediterranean but has become fully adapted in our region.



Small balsam

Impatiens parviflora



Invasive species forming thick growths, especially in forests. Belongs to annual plants with tiny yellow flowers. Produces large number of seeds ejected into the surroundings. Native to Asia.

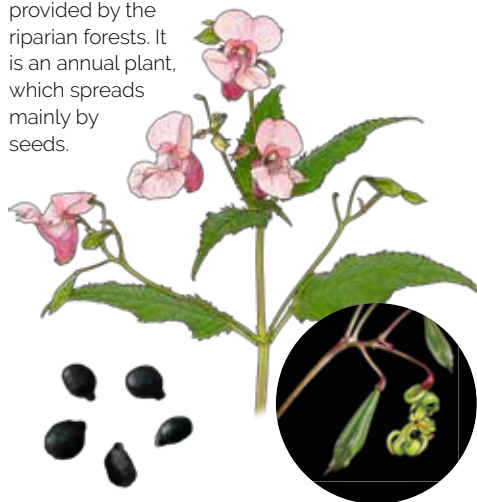


Himalayan balsam

Impatiens glandulifera



Invasive species raising concern of the European Union. Very decorative plant with gorgeous pink flowers. Comes from the Himalayas, grows to up to 3 meters and prefers shady and humid places, which can also be provided by the riparian forests. It is an annual plant, which spreads mainly by seeds.



Tall goldenrod

Solidago gigantea



Invasive perennial plant, which forms continuous yellow-flowering growths towards the end of summer and in autumn. Its stems are bare, can be sparsely hairy only at the time of flowering. It is a strong pollen allergen. Native to North America. Imported to Europe as melliferous goldenrod (its stems carry rough hairs and dense foliage).

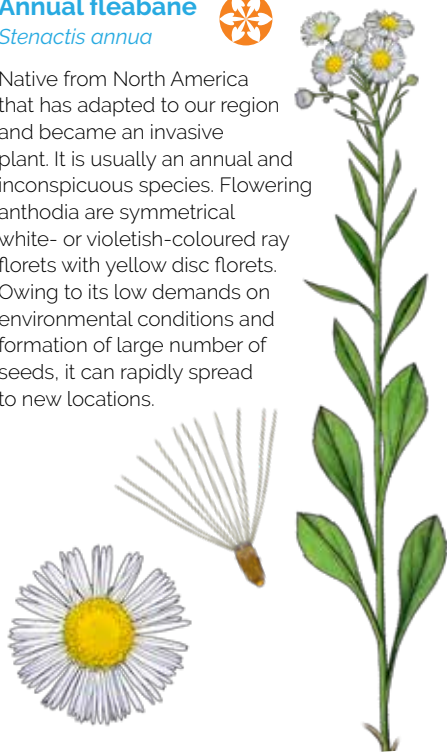


Annual fleabane

Stenactis annua



Native from North America that has adapted to our region and became an invasive plant. It is usually an annual and inconspicuous species. Flowering anthodia are symmetrical white- or violetish-coloured ray florets with yellow disc florets. Owing to its low demands on environmental conditions and formation of large number of seeds, it can rapidly spread to new locations.



European dewberry

Rubus caesius

In riparian forests, it is a native species but can be found in diverse biotopes that are often damaged. This creeping shrub forms long shoots and has numerous thorns so growths can be difficult to cross. It can be recognized by leaves, which almost always exhibit three-fold symmetry, and shoots (stems) that are glaucous, easy to rub off. Fruits are edible though not very tasty.



Key



Species of softwood forest – inundation persists longer here and the forest is dominated by softwood trees



Species of hardwood forest – inundated for shorter periods of time and the forest is dominated by hardwood trees



Invasive species – non-native species that spreads rapidly in our region, threatening the native species



Lianas – are climbing plants with a woody stem

Spotted dead-nettle

Lamium maculatum

Perennial plant growing mainly in forests and shady areas. A very decorative plant that has been used to cultivate several distinct variants. Bilabiate flowers are seated and arranged in verticillasters or clusters and grow from leaf axils. Flowers are pink with a shade of red. It attracts bumblebees and many other pollinators.



Hairy violet

Viola hirta

The plant is dimorphic. When in blossom, the leaves are low, later they are petiolate for an extended period. Both leaves and stem have dense hairs sticking out in a balanced fashion. It grows in riparian forests around Bratislava as well as in drier meadows.



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