The sycamore maple (Acer pseudoplatanus L.) is a large fast-growing deciduous tree with a broad, domed crown. Its primary range includes central, eastern and southern Europe, Caucasus and northern Minor Asia, but since the seventeenth century it started to be naturalised north of its native range both in Europe and in the other temperate regions of the world. It is rarely found in pure stands but often dominates mixed softwood deciduous forests and typically occurs on nutrient-rich soils that often accumulate in the shady micro-climates. Sycamore maple is tolerant to a variety of stresses including pollution and salt winds, making it suitable for urban and coastal planting. Its timber is useful for a variety of purposes including furniture, joinery, indoor flooring and musical instruments.

The sycamore maple (Acer pseudoplatanus L.) is a large deciduous tree that can live for more than 350-400 years. It grows up to 30-35 m in height with a diameter of 60-80 cm and a very broad domed crown whose diameter can sometimes exceed the height of the tree. However, it also has a strong root system making it quite wind-firm despite the large crown. It has large palmate opposite leaves with five pointed lobes that vary considerably in shape and size depending on the age and vigour of the shoot, but which may reach 18 × 26 cm in young vigorous trees. The leaves are dark green above with a slightly glaucous underside and a scarlet petiole. The bark is smooth and grey in young trees, later becoming rougher and cracked into scaly squares that curl away at the edges. It is a monoecious species, producing yellow-green flowers on hanging racemes 6-12 cm long in mid-April when the tree is 10-20 years old. There is a wide array of pollinating insects, each inflorescence may result in up to 30 flowers and a single tree may have more than 800 inflorescences. The seeds mature in the autumn and are double samaras set in a V shape, which catch the wind and spin as they fall. These wind-dispersed seeds give rise to occasional long-distance dispersal (distances of up to 4 km have been recorded), as well as to intense dispersal around the mother plant in a radius of about 200 m. Its seeds do not accumulate in a persistent seed bank, but germinate in the early spring following dispersal.

**Distribution**

The natural distribution range of sycamore includes Central and Eastern Europe and the mountain systems of Southern Europe (i.e. Apennines and Dinaric Alps), Caucasus and North of Minor Asia. Its northern limit is South Denmark at around the 55° North parallel. Although it has not yet managed to fill all of its potential range on its expansion from Ice-Age refugia in southern Europe, after its intensive plantation in the 18th century, it has become naturalised north of its native range in Europe: e.g. United Kingdom and Scandinavia, and even in other continents: i.e. North and South America, New Zealand, Australia and India.

**Habitat and Ecology**

The sycamore maple is not able to thrive in drought-prone regions. Both germination and establishment take place under a wide pH range. It grows well in shaded conditions, particularly in its juvenile stage and this explains its ability to succeed within established forests. Nonetheless, seedlings and saplings have become naturalised north of its native range in Europe: e.g. United Kingdom and Scandinavia, and even in other continents: i.e. North and South America, New Zealand, Australia and India.

**Acer pseudoplatanus in Europe: distribution, habitat, usage and threats**

S. Pasta, D. de Rigo, G. Caudullo

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Importance and Usage

The sycamore maple is tolerant to pollution, exposed sites including salt winds and low summer temperatures. Together with its striking and attractive appearance, this makes it a popular choice as an ornamental tree in urban and coastal locations. Its litter improves humus formation and nutrient cycling and thus contributes to landscape diversity. Its seeds contain large amounts of hypoglycin A, which may induce atypical myopathy on horses grazing under their canopies. On the other hand, some parts of sycamore maple can be consumed by men: for instance, in Poland fresh tree sap was drunk as a beverage, leaf buds were eaten raw by sheepherds, and leaves were put in the oven under baking bread both to prevent it from sticking and to give it a special flavour. The leaves are still used to wrap local cheese in Northern Spain. Moreover, some promising chemical compounds which could be used against several types of cancer have been recently isolated in several Acer species.

Threats and Diseases

The sycamore maple and other species of genus Acer are highly vulnerable to the Asian longhorn beetle (Anoplophora glabripennis) which is a large wood-boring beetle native of Asian countries, such as Japan, Korea and China. Bark stripping by grey squirrels and damage by other browsing animals can reduce the amount of valuable timber. The leaves may be severely damaged by insects and pathogens.

Field data in Europe (including absences) vs. Observed presences in Europe

Map 3: High resolution map estimating the maximum habitat suitability.

Autoecology diagrams based on harmonised field observations from forest plots.
affected by ascomycete fungi such as Rhytisma acerinum, Plasmopara terebella, and Petriola echinata, or by the imperfect fungus Deuteromycete Cristulariella depraedans. Several bark diseases are caused by fungi such as Necriza cinnabarinus, Verticillium tapetis (Verticillium albobrum) and Cryptostroma corticale. The latter is harmful and causes the so-called ‘sooty bark disease’, whose fatal attacks are triggered by high summer temperatures and drought, so that predicted climate change is likely to increase its incidence at lower altitudes and latitudes.

References

[11] E. Ayanz, J. de Rigo, D., Caudullo, G., Houston Durrant, T., Mauri, A. (Eds.), Europe: distribution, habitat, usage and threats of invasive alien species in Europe that damages the tree by stripping the bark. (Copyright Jim Ferguson, commons.wikimedia.org: CC-BY)