



The maples of Europe – Part 1

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General distribution and characterization

Europe is the home of 10–12 native maple species and a number of infraspecific taxa. It is not clear how many subspecies and varieties of genus *Acer* can be included in this group because the south-east boundary with Asia is not universally defined. The discussed areas lie mainly between the Black Sea and the Caspian Sea (Caucasus) where *Acer cappadocicum*, *A. heldreichii* ssp. *trautvetteri*, *A. monspessulanum* ssp. *ibericum* and *A. velutinum* with its ssp. *vanvolxemii* occur. Also Cyprus – the native country of *A. obtusifolium* is sometimes regarded as a European country (it has been a European Union member since 2004). Another point of difficulty is the uncertain taxonomical status of some Middle East varieties and subspecies according to different authors and the not definitive areas of natural distribution of them.

I decided to describe Caucasian and Cypriot native maples in this paper even when they are not listed in Flora Europea. I included, also, all subspecies of *A. hyrcanum* to give a description of the whole complex of this difficult taxonomic group. Most of them occur in Europe and only three of them are native to the Asian part of Turkey.

European maples are an example of a stark contrast. While most of them occur naturally in the Mediterranean area (mainly in the east) expanding towards the Middle East, only three (*A. platanoides*, *A. pseudoplatanus* and *A. campestre*) have wide areas covering most of Europe. Additionally, the three latter species (together with *A. tataricum*) are very popular and widely cultivated, with numerous selected cultivars (not the case with *A. tataricum*), while the rest of them – with some exceptions – are very rare even in botanical collections. Generally, the genus *Acer* in Europe is represented by an exceptionally small number of sections compared to other parts of the world. All the European species belong to section *Acer* and *Platanoidea*, with one species from section *Ginnala*.

Pan European species

1. *Acer platanoides* L.

Morphology: Norway maple is certainly the most common and popular maple species both in nature and in cultivation in Europe together with *A. pseudoplatanus*. It is a large tree up to 30m tall with a round, dense crown. The main characteristic features are large leaves, 20cm wide, 5–7-lobed, coarsely dentate to lobulate, with a somewhat glossy upper part. The petioles and leaf veins have milky sap. Flowers are yellow, in corymbs, appearing before leafing-out, usually very abundant and ornamental (see photo on back cover). Samaras are 4–7cm long with flat nutlets and are distinctly



larger than samaras of its closest relatives.

Natural occurrence: It is a lowland and submontane species, found in mountains only in southern parts of the natural range. It does not form its own communities but grows solitary in deciduous and mixed forests on moist, nutrient- and humus-rich soils (mesophytic species). It is often found in low tree level and in the undergrowth. This species spreads very easily and naturalizes in forest ecosystems beyond the natural geographical range and is treated in some countries (like USA) as an invasive species. In these countries due to extreme shade tolerance, young plants of *A. platanoides* form dense undergrowth and are especially dangerous for low native forest plants.

Hybrids: In botanical collections it can hybridize with species from section *Platanoidea* like *A. cappadocicum* or *A. truncatum*.

Requirements and cultivation: Norway maple is undemanding, shade and urban sites tolerant, frost hardy (USDA Zone 4), fast and easily grown. Therefore the species and a few dozens of selected cultivars are widely cultivated in parks, gardens, public spaces and streets. The cultivars were selected mainly for purple, yellow, variegated or dissected leaves or special habit e.g. regular, dwarf, globular or columnar.

In forestry it is a valuable but not a very important source of timber due to its scarcity. The wood is highly prized for its high technical properties and used for production of veneers, parquets, linings and sport goods. Because of its resonance properties it is also used for musical instruments and also parts of mechanisms of pianos.

2. *Acer pseudoplatanus* L.

Morphology: Sycamore maple is a large tree up to 30m in height and almost as wide. The bark of the trunk is flaking with flat gray-brown scales but not as attractive as that of *Platanus*. The leaves are large, rough, 10–15cm across, 3–5-lobed, dark green above and pale green beneath. Lobes ovate, irregularly coarsely serrate. Yellow-green flowers appear in pendulous long racemes after leafing-out in mid-May to June. Samaras held at right angles, 5cm long, with ovoid nutlets.

Natural occurrence: *Acer pseudoplatanus* is a central European mountain species, growing also in the Caucasus and Pyrenees. Found in mixed forests on mountain slopes. Similar to *A. platanoides*, it does not form its own pure forest but grows singly or in groups in rich lime-sycamore-beech forests. It has been cultivated in Europe for ages and due to frequent naturalization the boundaries of its natural geographical range are difficult to estimate. In many countries worldwide *A. pseudoplatanus* has become an invasive species in lowland moist and soil-rich areas like river valleys etc.

Hybrids: In nature it makes hybrids with *A. heldreichii* – *A. x pseudoheldreichii*. In cultivation there are found hybrids with other species from section *Acer*: *A. monspessulanum*, *A. opalus*, *A. velutinum*, but also with other species like *A. campestre* and *A. griseum*.

Requirements and cultivation: This maple is more demanding than the previous species. It likes moist, deep soils and sunny to partial shade places. It does not withstand urban

dry sites and therefore cannot be used as a city street tree. However it is very valuable park, garden and roadside tree. Numerous cultivars were selected with purple leaf undersides and/or variegation, golden leaves or compact crown suitable for small spaces. Although it is a very hardy species (Zone 4), it can be injured by late spring frosts. The wood is used similarly to the above described species.

3. *Acer campestre* L.

Morphology: Field maple is a moderate sized tree with a round crown or sometimes a shrub, 7–15m, rarely 20m in height. Young branches, especially in young trees are often covered by thick corky bark. Leaves are extremely variable, 3–5-lobed, 5–10cm across. Lower surface pubescent or not, lobes with few obtuse teeth or entire. Petioles with milky sap. Flowers yellow in corymbs, appearing before leafing-out, not as abundant as in *A. platanoides*. Samaras 2.5–5cm long, pubescent or glabrous, with flat nutlets.

Natural occurrence: It is a lowland species growing as single specimens on the edges of forests and thickets or scattered as the lower tree layer in deciduous forests. Also in plains, hills or in low mountains both in shaded and sunny places, mostly to 1000–1400m a.s.l.

Hybrids: In cultivation there are found crosses with *A. pseudoplatanus* (*A. x ramosum*), *A. cappadocicum* ssp. *lobelii* (*A. x zoeschense*) and *A. monspessulanum* (*A. x bornmuelleri*).

Requirements and cultivation: Field maple is one of the most adaptable and undemanding maple species growing very well in sunny or shady places, dry to moist. It prefers chalky soils and warm places. It tolerates heat and air pollution and therefore is an ideal tree for urban planting. Field maple can also be pruned and is very useful for formal hedges or topiary. About twenty cultivars of this species were selected for its variegated, yellow or purple leaves, dwarf growth or upright, compact habit suitable for narrow street planting. The wood although very valuable, is seldom used because of very limited availability of the timber.

Southern species – Section *Acer*, Series *Acer*

4. *Acer heldreichii* Orph. ex Boiss. ssp. *heldreichii*

Morphology: *Acer heldreichii* known as the Balkan maple is a large tree 20–25m (65–81ft) tall with smoothish bark. Buds are dark brown. Leaves unfold very late in May, 8–14cm across, 5-lobed, with abaxially villous glabrescent venation. Lobes narrow, usually widest near the top, incised almost to the base with coarsely serrate margins. Yellow-green flowers appear after leafing-out. Fruits with wide wings, reddish when young, very similar to those of *A. pseudoplatanus*.

Natural occurrence: It is native to Balkan countries occurring only in mountains 1000–2000m (4,250–8500ft) a.s.l. It grows in the fir or mixed mountain forests, sometimes also in alpine habitats.

Hybrids: In nature it often forms a hybrid with *A. pseudoplatanus* – *A. x pseudoheldreichii* which is much more frequent in cultivation than true *A. heldreichii*. However, it is

usually wrongly labelled as *A. heldreichii*. It can be distinguished from it by green bud scales with black margins, while leaves are usually similar to *A. heldreichii*. In nature it also hybridizes with ssp. *trautvetteri* in the European part of Turkey, where the areas of both subspecies overlap.

Requirements and cultivation: It is a hardy species (Zone 5) requiring rich, moist soils and sunny to semi-shaded sites.

5. *Acer heldreichii* var. *macropterum* (Visiani) Pax

Morphology: This variety differs from the type in its larger samaras that are 4–5cm long and with the wings arranged at a wider angle. The leaves are larger, 13–14cm wide and long.

Natural occurrence: It is native to mountain forests of Serbia, Bulgaria, Montenegro and Croatia. It grows in humid deciduous forests in lower mountain elevations.

Requirements and cultivation: As for the type.

6. *Acer heldreichii* ssp. *trautvetteri* (Medw.) A. E. Murray

Morphology: *Acer heldreichii* ssp. *trautvetteri* is a large tree, similar to *A. heldreichii* in size, reaching 15–20m (48–65ft). The bark on the trunk is smooth and peeling only on older trees. Buds are dark brown showing inner red scales before leafing-out in spring. Leaves are not as deeply incised as in *A. heldreichii*, 10–15cm across, with larger and sharper serrated to lobulate margins. Flowers are identical with the typical subspecies. Fruits with parallel and often overlapping wings, conspicuously red when young.

Natural occurrence: This subspecies occurs in the Caucasus, north Anatolia and in European Turkey. It is usually found in mountain areas singly or in small groups in birch and beech forests or in *Abies nordmanniana* and *Picea orientalis* forests. In Turkey, it grows at lower elevations.

Requirements and cultivation: It is a mesophyllic and hardy (Zone 5) species preferring fertile, moist soils containing calcium. It needs a sunny or semi-shaded site.

7. *Acer velutinum* Boiss.

Morphology: This is one of the tallest maple species reaching usually 20–25m (65–81ft) but sometimes even to 40m (130ft). The bark on the trunk is smooth and peeling only on old trees. Buds are brown, large, sericeous and narrow conical. Leaves are large, 15–25cm across, with five round-ovate serrate-crenate lobes. They unfold very late in May. Flowers are green-yellow in wide corymbs appearing after the leaves. Samaras are very similar to those of *A. pseudoplatanus*, but usually held at a wider angle.

Natural occurrence: The velvet maple is native to the Caucasus and southern coast of the Caspian Sea. It is both a lowland and mountain species extending from sea-level to 1800m (5,850ft) a.s.l. It grows on mountain slopes, river terraces and in gorges in deciduous forests as single trees or in small groups. In the mountains of S.E. Azerbaijan it forms pure and dense though not very large forests.

Hybrids: This species as well as its varieties can easily hybridize with *A. pseudoplatanus*



Table 1. Main differences between European maple taxa of section *Acer* series *Acer*. The most important features for identification are in bold type.

Taxon name	bud colour	lobes incision (% of leaf length)	leaf underside	leaf margin serration	lobes	inflorescence	angle of samaras
<i>heldreichii</i>	brown, ovate	75–90	villous along veins	obtuse	oblanceolate – oblong	corymbose, erect	< 90°
<i>heldreichii</i> spp. <i>trautvetteri</i>		60–75	villous along veins	acute	oblong		parallel, bright red when young
<i>pseudoplatanus</i>	green with brown margin, ovate	35–60	villous along veins	obtuse	ovate	narrow paniculate, pendulous	< 90°
<i>velutinum</i>	brown, narrow conical	50–60	sparsely pubescent to tomentose	obtuse or round	ovate	corymbose, erect	≥ 90°
<i>velutinum</i> var. <i>glabrescens</i>			glabrous				
<i>velutinum</i> var. <i>vanvolxemii</i>			villous along veins				almost horizontal

in cultivation, giving hybrids with brown buds and corymbose inflorescences. Hybrids with *A. heldreichii* should also be possible.

Requirements and cultivation: This species prefers rich and moist soils. The site should be wind protected and warm because of some frost tenderness. It is quite shade tolerant but prefers sunny sites.

8. *Acer velutinum* var. *glabrescens* (Boiss. et Buhse) A. E. Murray

Morphology: This variety differs only in a glabrous underside of the leaf.

Natural occurrence: Similar to the typical variety.

Requirements and cultivation: As for the type.

9. *Acer velutinum* var. *vanvolxemii* (Mast.) Rehder

Morphology: This variety grows as a narrow tree. Leaves are not glossy like those of the type and are larger, attaining 30cm across. Undersurface pubescence is limited to the main veins. Samaras are held almost horizontally.

Natural occurrence: It is native to the eastern part of the Caucasus (Kakhetie) in Georgia.

Requirements and cultivation: As for the type.

