

## **Large wild service trees: The thickest wild service tree in the world grows in Denmark**

by Jens Peter Skovsgaard & Hans Chr. Graversgaard

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### *The thickest wild service tree in the world*

The world's thickest wild service tree is located in Moesgaard Park south of Aarhus, Denmark (Figure 1). In 2013 the stem diameter at breast height (dbh) was 148 cm (circumference = 464 cm) and total tree height was 24 m. The stem forks at a height of 2 m above ground, but this does not influence the stem diameter at 1.30 m. The crown diameter was between 21.6 and 26.4 m. The health condition of the tree was excellent, but with some top dieback. The origin and age of the tree remain unknown, but based on archival studies and growth estimates derived from past measurements of stem diameter (Table 1) we believe it was planted sometime between 1783 and 1808, resulting in an estimated age of between 205 and 230 years. In 2009 we collected fruits, extracted seeds (1.53 seeds per fruit, average weight = 0.03775 g per seed) and had them sown. Germination was successful, but the seedlings appeared to originate from hybridization (based on poor growth and odd foliage) and most of them eventually died.

### *The second thickest wild service tree in Denmark*

The second thickest wild service tree in Denmark is located in the Arboretum at Charlottenlund north of Copenhagen (Figure 2). The tree originates from the Mediterranean region and was planted in 1851. In 2013, at an age of 162-165 years, dbh was 82 cm, height was almost 22 m and the tree was still in good health. The stem has had an average growth rate of 1.56-1.59 cm per year on circumference, or 0.5 cm per year on dbh.

### *Large wild service trees in the forest*

The largest wild service trees in the forests of Denmark can be found in Døndalen Forest on the island of Bornholm (Skoven 2013/6-7) and in Ulvshale Forest on the island of Møn (Skoven 2013/1). Both locations host trees with a dbh up to 36 cm and a height up to 17.5 m (one tree has been measured at over 20 m). Elsewhere in Europe wild service tree in forest settings may reach stem diameters of more than 70 cm (Figure 3). Based on past measurements the growth rate of the largest wild service trees in the unmanaged Ulvshale Forest was estimated at 1.8-4.4 mm per year during 2002-12.

### *Large wild service trees in other countries*

A wild service tree on Parsonage Farm 15 km northeast of Hastings in Great Britain and one at Thenneberg 45 km southwest of Vienna in Austria had stem diameters similar to that of the large tree at Moesgaard in Denmark, but both collapsed some years ago. A wild service tree in a field near Mayerling 35 km southwest of Vienna is now believed to be the second thickest in the world, with a dbh of approximately 15 cm less than that of the Moesgaard tree. Below this are a number of trees with stem diameters of 100-120 cm, many of which are located in Austria (Figure 4).

### *Conclusion*

The large wild service tree in Moesgaard Park has been known for decades as one of the thickest in the world and now is clearly the outright champion. The tree at Charlottenlund is probably the second thickest in Denmark. The ages of the trees as well as their growth performance and good health indicate the potential of wild service tree in Denmark and that the species is suited for use in silviculture. The growth rates indicate that a target dbh of 50 cm is suitable for silviculture in Denmark.

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