

Acer rufinerve, a new invasive tree in Belgium

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1. Introduction

The red-veined maple, *Acer rufinerve*, is a tree native to Japan described as an early successional species of temperate forests. It is characterised by a very short generation time, high survival and growth rates. It has been introduced as an ornamental in gardens and public green areas of many countries since several decades. Although invasion histories were never described so far, *A. rufinerve* has been recently reported to invade the understorey of a forest of 300 ha near the city of Mons (forêt domaniale de Bonsecours). A few individuals were planted over there by foresters in 1950-1970. Today, a significant part of the forest is colonised.

We conducted a systematic inventory of this forest based on a 50 m x 50 m sampling grid to map plant distribution at local scale and document the invasion. We especially investigated dispersion, habitat preferences and impact on other plant species.

2. Distribution and dispersion patterns

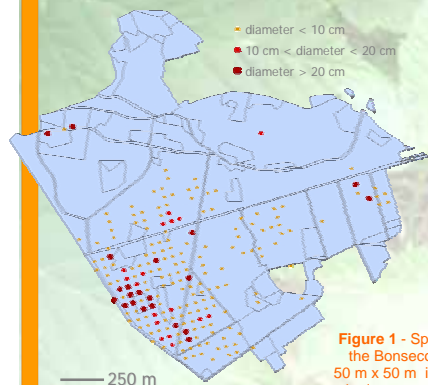


Figure 1 - Spatial distribution of *Acer rufinerve* in the Bonsecours forest, based on a systematic 50 m x 50 m inventory. Dot size is proportional to the largest stem diameter recorded in each plot.

The red-veined maple population of Bonsecours is made of a few large trees surrounded by a large number of seedlings and young stems (see figure 1). Fruit production is effective since tree stems reach 10 cm diameter.

Forest colonisation is rather efficient as more than 60 ha were colonised during the last two decades (species presence was found in 20 % of survey points). Seeds may be dispersed over distances of 250 meters, maybe more. It has not been found so far in neighbouring forests.

3. Habitat preferences

A principal component analysis was computed on ecological data describing survey plots in order to describe the habitat preferences of *A. rufinerve* within the Bonsecours forest (see figure 2). Whereas the forest mainly grows on podzolic soils, *A. rufinerve* tends to avoid the most dry and acidic soils (pH < 4.0). It clearly prefers oak over beech dominated stands. It is often found together with *Carpinus betulus* and *Prunus serotina*, another invasive tree species.

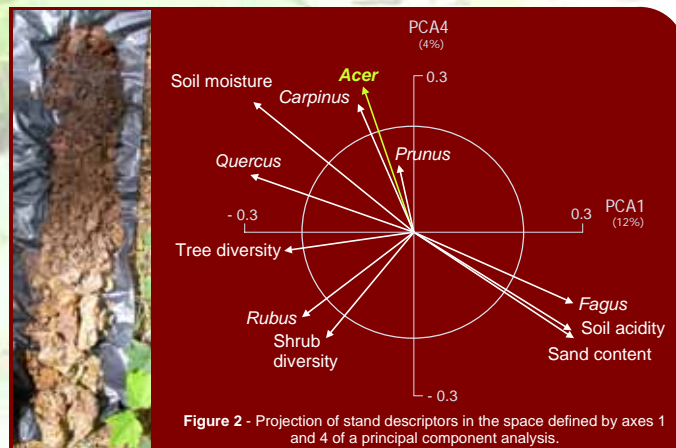


Figure 2 - Projection of stand descriptors in the space defined by axes 1 and 4 of a principal component analysis.

4. Impact on native vegetation and management

Young stems of *A. rufinerve* form very dense thickets wherein few herbaceous plant species are able to grow. Species like *Convallaria majalis*, *Lonicera periclymenum*, *Luzula* spp. and *Pteridium aquilinum* are likely to be outcompeted by the invasive tree (see pictures). However, bramble *Rubus fruticosus* often co-occurs with it, sometimes at high densities.

A rapid eradication of this tree species is recommended. Control is however a challenging task due to the strong resprouting capacity after cutting (see picture). Best management practices are currently tested by one of us, in collaboration with local forest managers (Mathieu Halford, FUSAGx).

***A. rufinerve* has the potential to become a very invasive plant in Belgian forest ecosystems in the coming years. But invasion can still be stopped! If you find other populations established in the wild, please point it out to scientists involved in the coordination of plant monitoring schemes at DEMNA, INBO or NBGB. Thank you very much for your cooperation!**



Don't miss it!

A. rufinerve is a small deciduous tree growing to a height of 8–15 m, with a trunk up to 40 cm diameter. Leaves have a typical shape, with 3 to 5 lobes. They wear small tufts of rusty hair on the veins when young, becoming glabrous when mature. Bark is olive-green, with a typical network of white stripes, especially among older specimen (group of "snakebark" or "snake-skin" maple trees).



Invasion of the forest understorey