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CREATING NATURAL FORESTS IN FLOODPLAINS (СОЗДАНИЕ ЕСТЕСТВЕННЫХ ЛЕСОВ В ПОЙМАХ)

Рассматриваются результаты исследования 15 лесных участков на пойменных территориях. На трех из них произрастает *Populus nigra*, *Populus alba*, на пяти – *Fraxinus angustifolia* spp. *danubialis* и *Populus alba* и на семи – *Populus alba*. Приведены данные, какой из типов леса является наиболее устойчивым к внедрению инвазивных видов деревьев и кустарников.

The forests in floodplains have a big problem, that in these areas turn up lot invasive tree and shrub species. In our research we wanted to know, that when we want to create forests, what are made up of native tree species, then on these areas what composition of tree species is logic to plant, that we can prevent the invasive species to take too many area. We made our mensurations on the regions of the Körös-Maros National Park, which located on the South-Transisza. We measured 15 forest details, three made from *Populus nigra* with *Populus alba*, five made from *Fraxinus angustifolia* spp. *danubialis* with *Populus alba* and seven are made only from *Populus alba*. In the mixed forests are the different species in different ratio. The ratio of the *Fraxinus angustifolia* spp. *danubialis* is between 20 and 85% (20, 70, 80, 80, 85%) and the ratio of the *Populus nigra* is between 20 and 80% (20, 30, 80%). The youngest forest is 11 years old, the oldest is 24 years old and the average field is 3,5 ha.

We thought that in the forests with *Fraxinus angustifolia* spp. *danubialis* contain less invasive species, because the *Fraxinus angustifolia* spp. *danubialis* has an allopathic action and the canopy closer of this species close higher than the other's.

This was so, we found in these forests the invasive tree species (*Acer negundo*, *Fraxinus pennsylvanica*) and the invasive shrub species (*Amorpha fruticosa*, *Vitis riparia*) in the slightest degree. When we enlarge the area covered by *Fraxinus angustifolia* spp. *danubialis* in the forest then the regrowth of the invasive species number will

fall, but the area covered by invasive shrub species doesn't depend on the area covered by *F. angustifolia* spp. *danubialis*, we experienced, that one of the *F. angustifolia* spp. *danubialis* forest there are 15% invasive shrub species (except in one part of the forest, where a thin out had been made, so the shrubs get more light, that's why there are 70% *A. fruticosa*).

In the forests with *P. nigra*, except one part, the black poplars decay, so here the areas covered by invasive species are high. In that one part of the forest, where the black poplars do not decay, the area covered by invasive tree

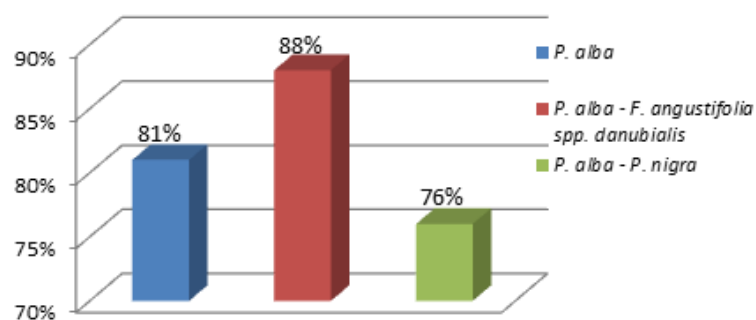


Figure 1. Canopy closer in different forests

species are low, however from one part of the forest we can't deduce.

In the forests with *P. alba* covered areas by invasive species almost twice higher (14,28%) as in the forest with *F. angustifolia* spp. *danubialis* (8%), and are the covered areas by invasive shrubs almost twice and a half higher (*P. alba* – 61%; *P. alba*-*F. angustifolia* spp. *danubialis* – 26%).

We examined in these forests the density of the native shrub species (*Rubus caesius*, *Viburnum opulus*, *Cornus sanguinea*) too. The dispersion of the data is similar to the invasive species. In the clear *P. alba* forest are the most native shrub species (40%), in the forest with *P. alba* and *P. nigra* is the density 18% and in the less native shrubs are in the *P. alba*-*F. angustifolia* spp. *danubialis* forests (4%). We found *Viburnum opulus* only twice and *Cornus sanguinea* only once, so we can say that these data are based on the density of the *Rubus caesius*.

The next viewpoint by the examine of the data is that we see the density of the individual species in the different forests. We experienced that the biggest differences are by the *A. fruticosus* and by the *R. caesius*. The density of *A. fruticosus* is in *P. alba* forests 61%, if there are *P. nigra* in the forest too, then this data is 43%. In *P. alba*-*F. angustifolia* spp. *danubialis* forests is the density of *A. fruticosus* 25%.

The density of *R. caesius* is similar to *A. fruticosus* just it is in average lower. In *P. alba* forests is the density 39%, in *P. alba*-*P. nigra* forests 18% and if there is *F. angustifolia* spp. *danubialis* with *P. alba* in the forest than only 4%.

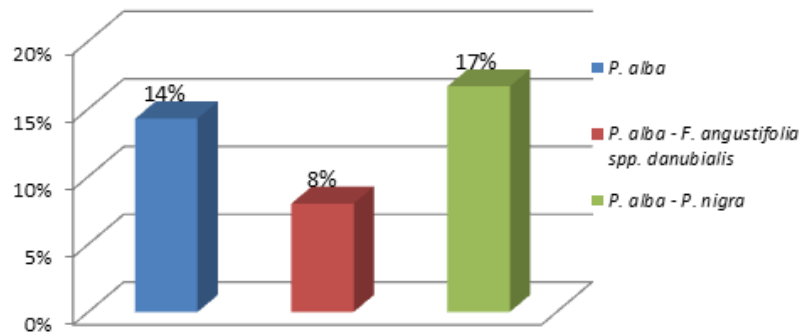


Figure 2. Density of the invasive regrowth in different forests

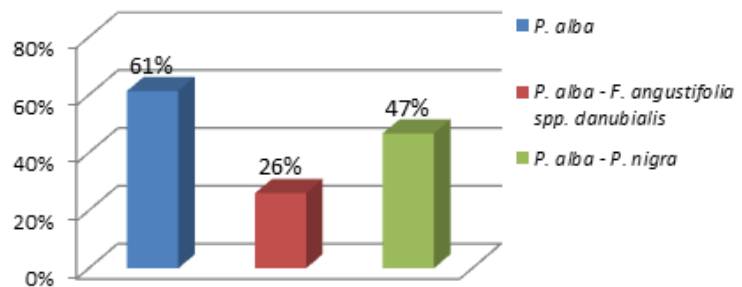


Figure 3. Density of the invasive shrubs in different forests

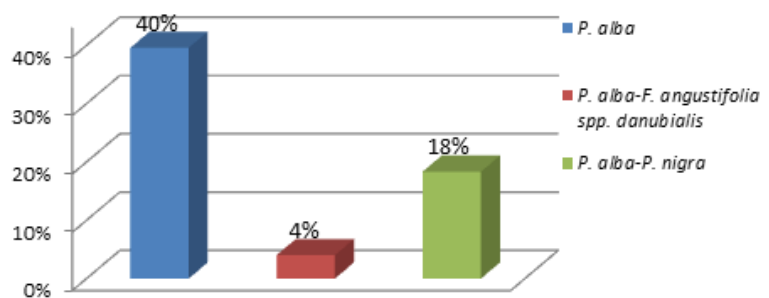


Figure 4. Density of the native shrubs in different forests

By *F. pennsylvanica* are the differences in the data not great but we can good follow it (*P. alba* – 10%, *P. alba-P. nigra* – 7%, *P. alba-F. angustifolia* spp. *danubialis* – 6%).

We examined the density of *A. negundo* and we experienced that it's in the *P. alba-P. nigra* forests is the highest (10%), in the *P. alba* forest is 4% and in the *P. alba-F. angustifolia* spp. *danubialis* forests only 2%.

We found even *V. riparia* and regrowth of *P. alba*, but we saw that it not depends on the type of the forest.

The density of the multiannual viable regrowth is a very important data because the oodles regrowth are useless if they die in one or two years. So we examine this factor too. We get the result that in the *P. alba* forests and in the forest with *P. alba* and *P. nigra* the density of the multiannual viable regrowth is the same, in both 2%. We didn't find multiannual viable regrowth in the *P. alba-F. angustifolia* spp. *danubialis* forests so we can say, that these forests drive back the regrowth of the invasive trees (and the native too).

Based on these data, we can say that from the examined forests, the *Populus alba - Fraxinus angustifolia* spp. *danubialis* forests prevent most of all the invasive plant species on the floodplains. Against the regrowth of the invasive tree species is good if we enlarge the ratio of the *F. angustifolia* spp. *danubialis*, but the density of the invasive shrub species not depend on this ratio.

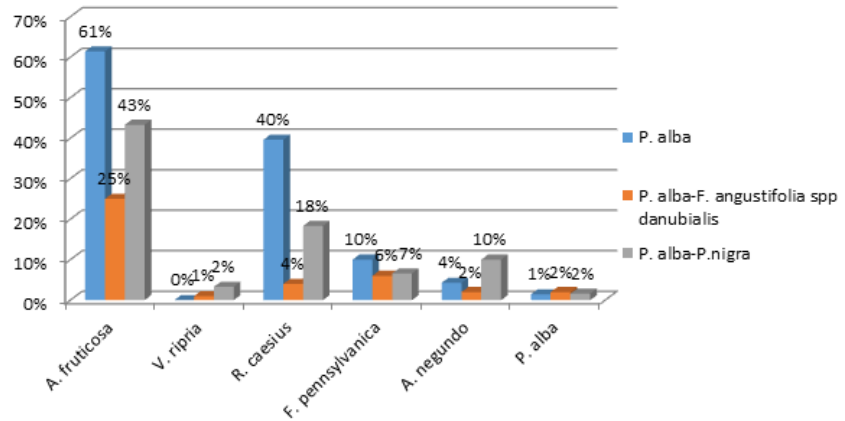


Figure 5. The severally density of the shrubs and the regrowth in the different forests

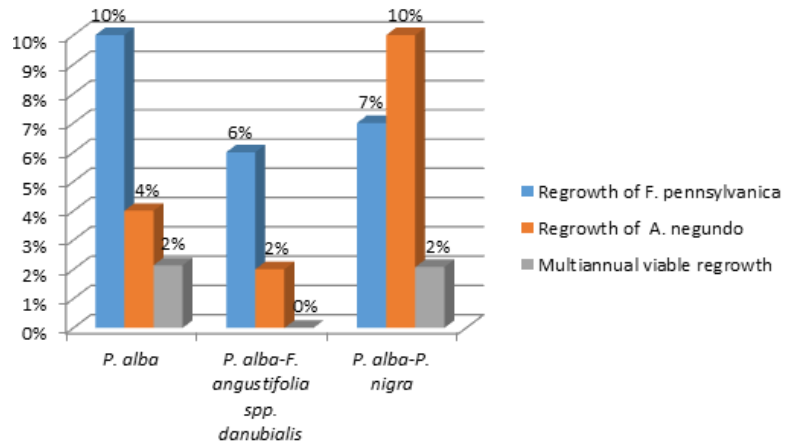


Figure 6. The density of the *F. pennsylvanica*, the *A. negundo* and the multiannual viable regrowth in different forests



Figure 7. A *P. alba* forest



Figure 8. *P. alba-F. pennsylvanica* forest