

Pine plantations on sand have high conservation potential

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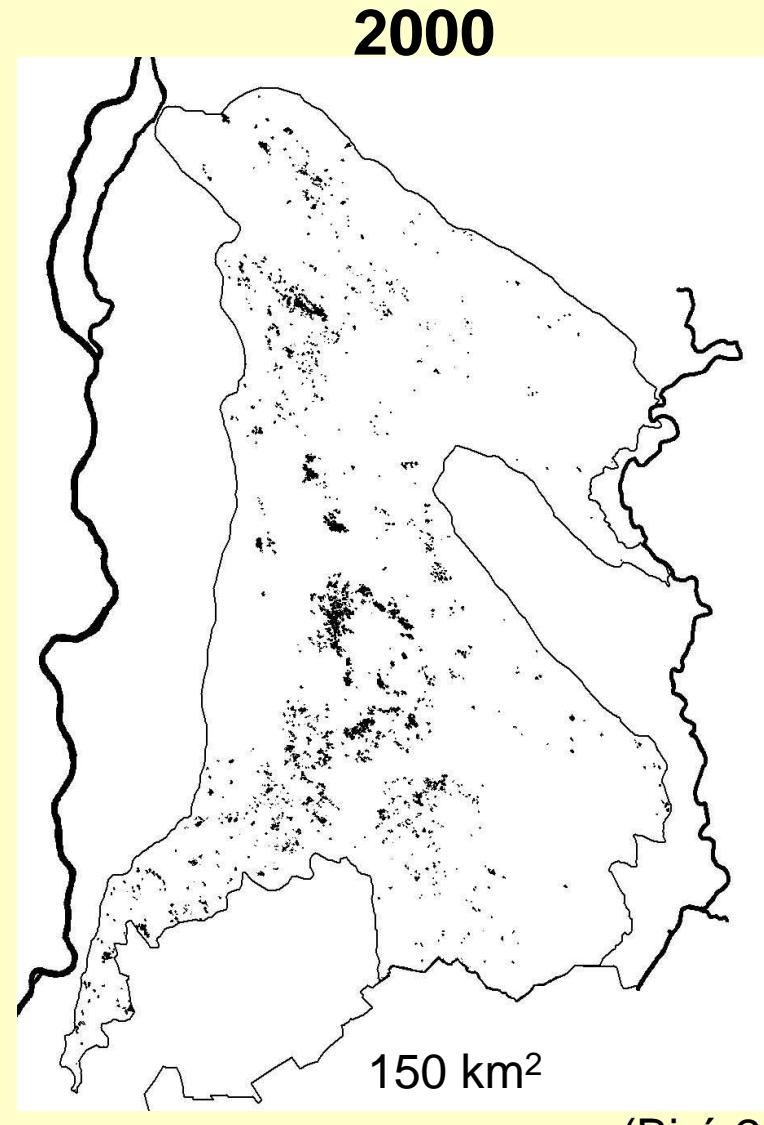
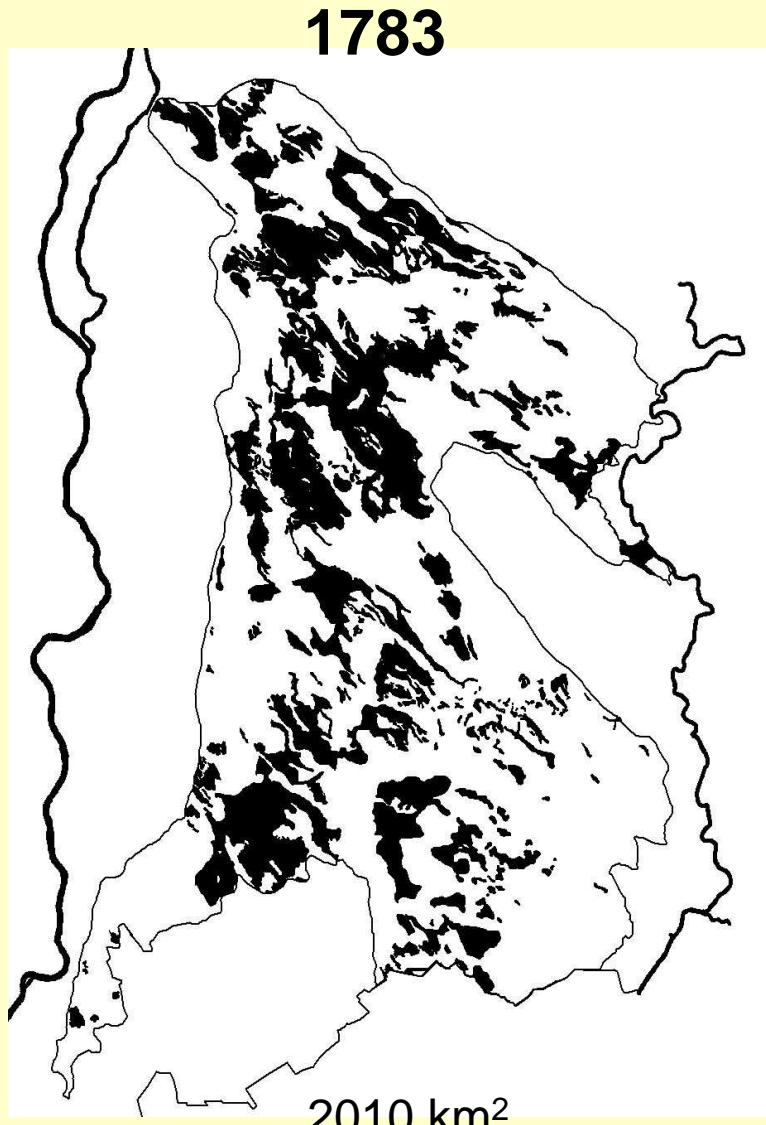
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Kecskemét
6 October, 2011

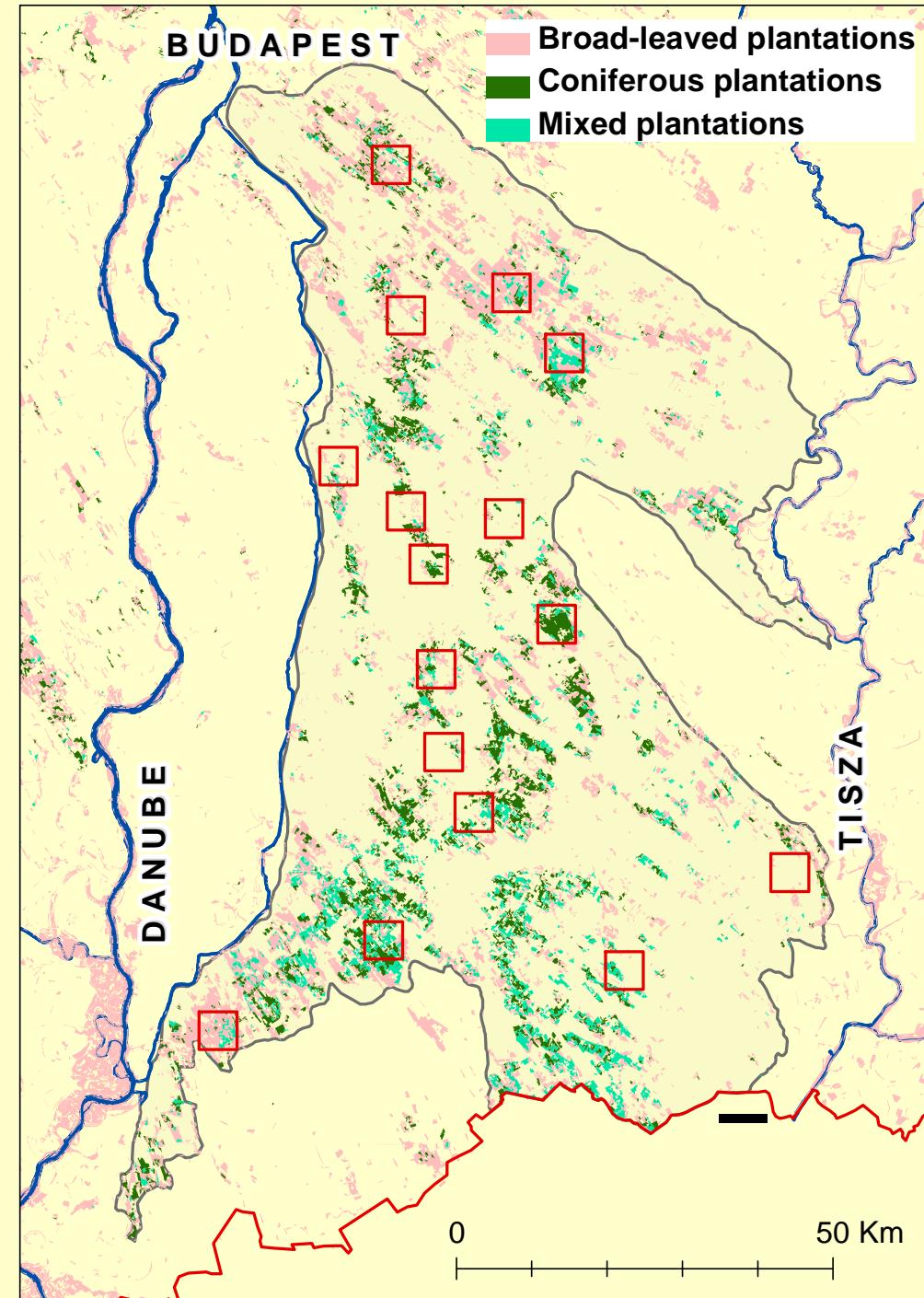
Outline

- Introduction: pine plantations at the Danube-Tisza Interfluve
- What facilitates the conservation potential of pine plantations?
- A case study: recovery after fire at Kéleshalom

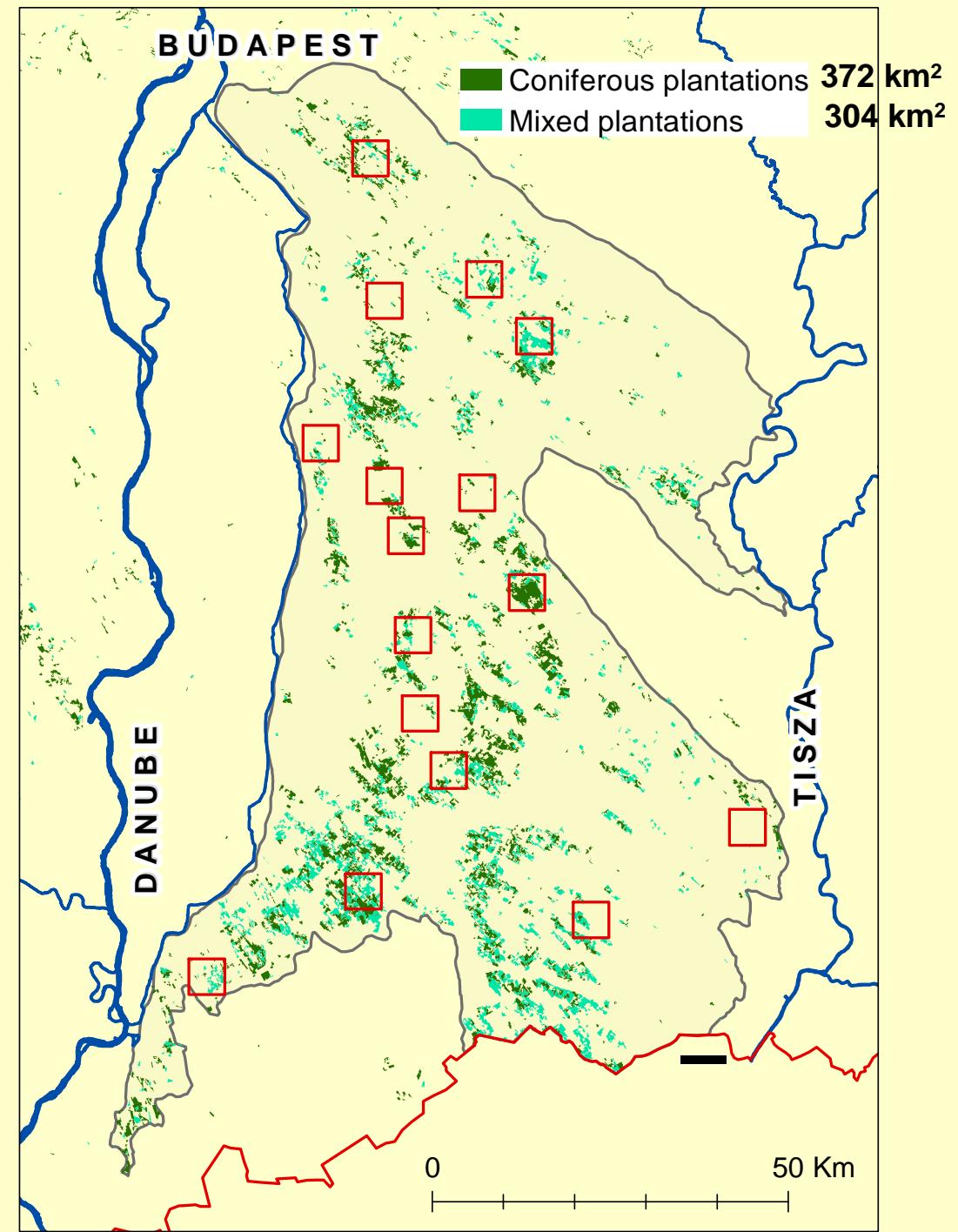
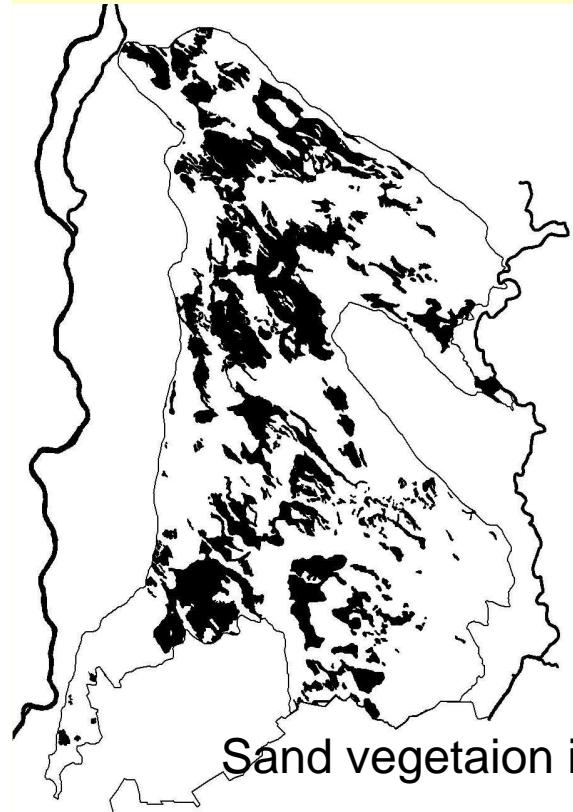
Change in the extent of natural sand habitats



Tree plantations at the Danube- Tisza interfluve



Pine plantations





Afforestation by pine: 1920s – 1970s

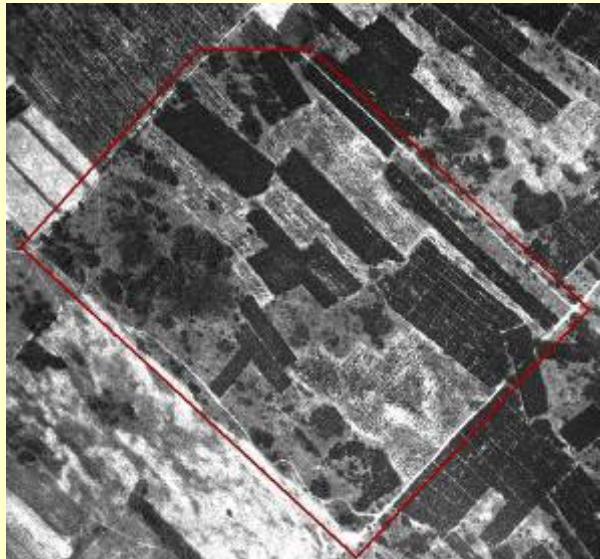


Afforestation at the Kéleshalmi Homokbuckák

1950



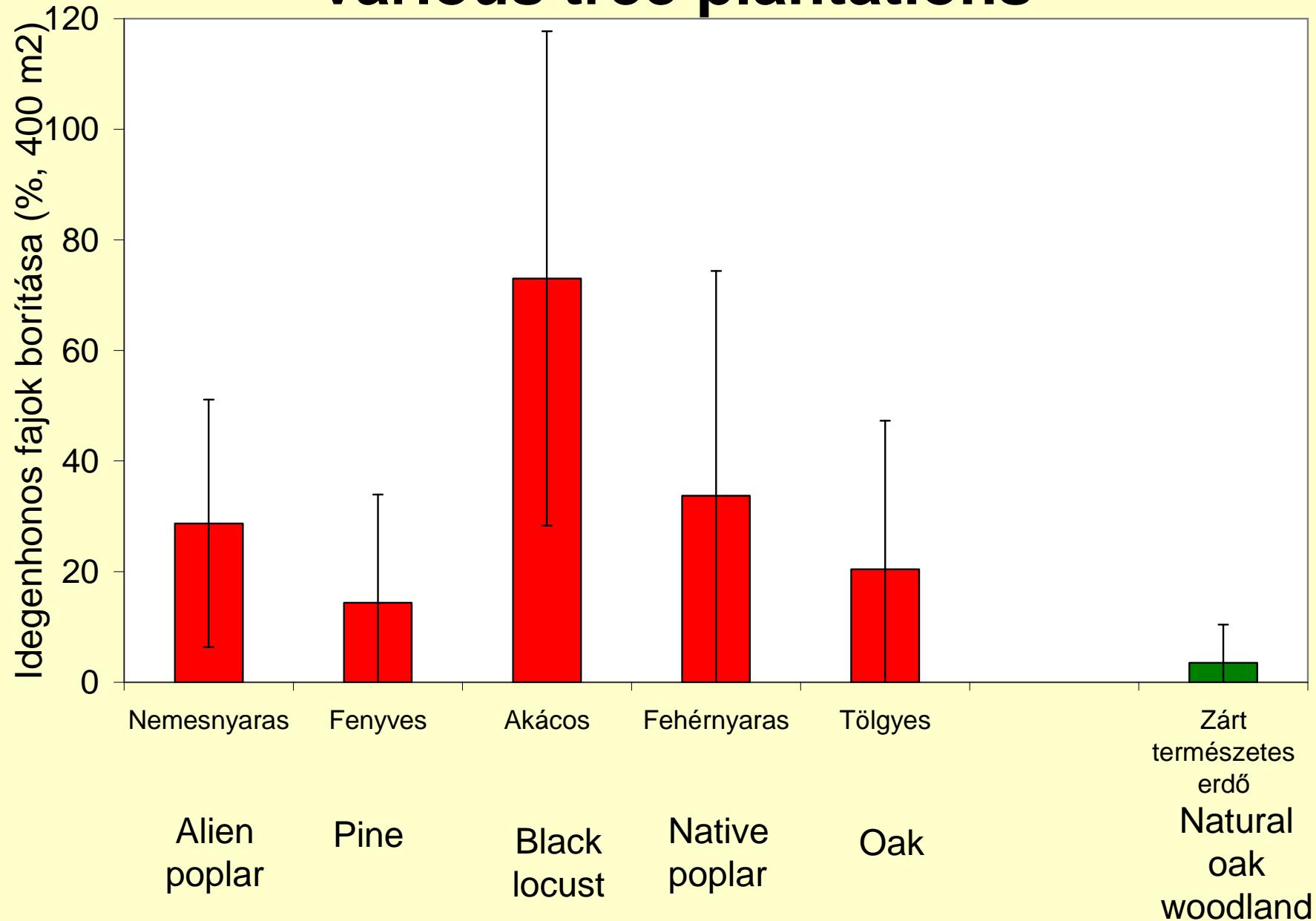
1989



2005

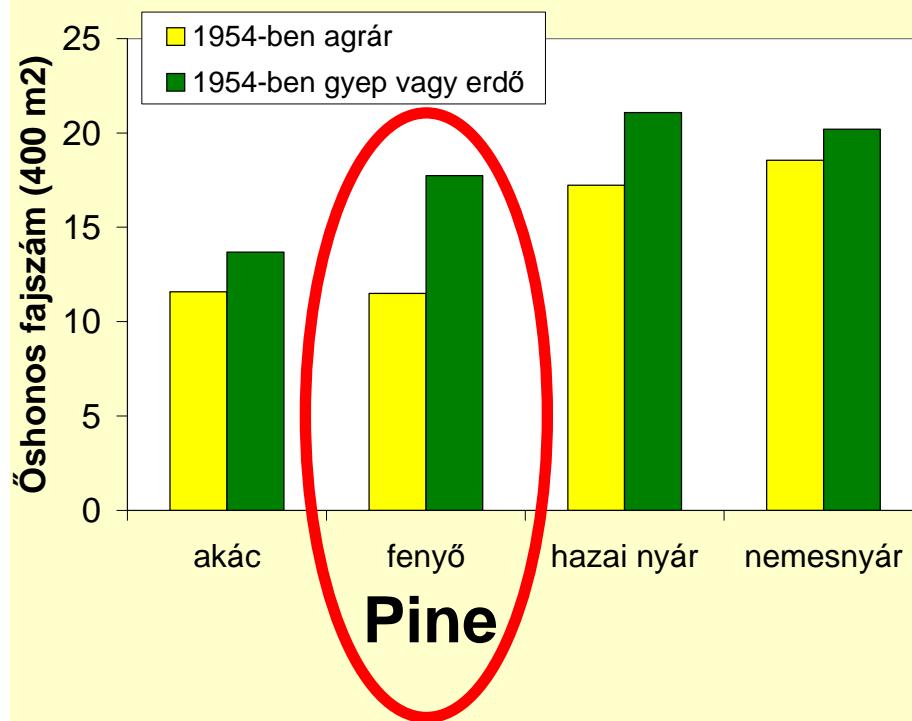


Cover of alien plants in the herb layer of various tree plantations

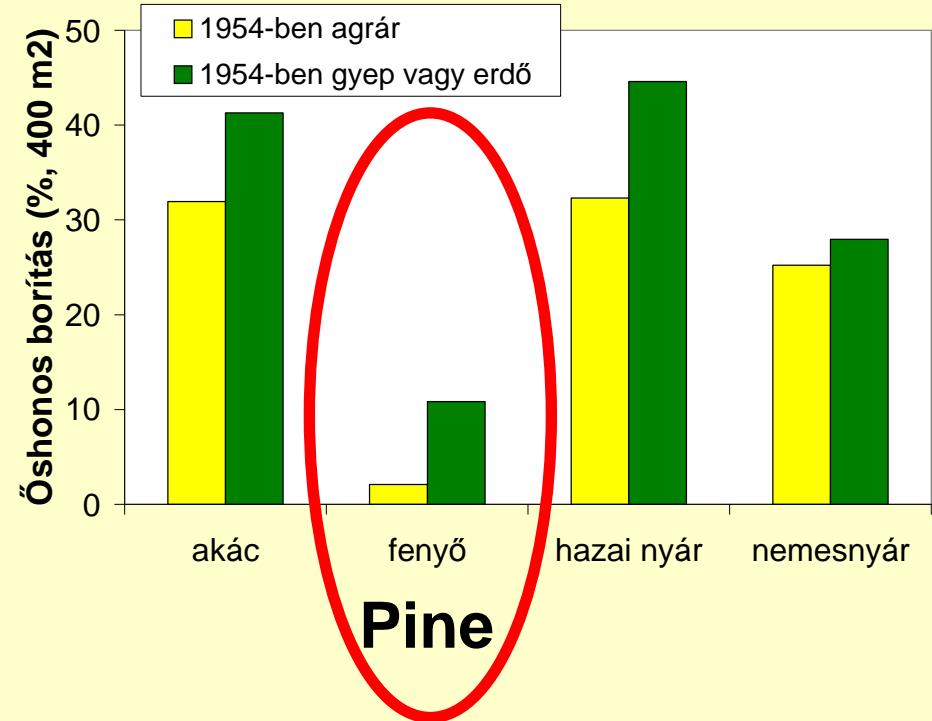


The number and cover of native species

**Native plant
species
richness**



**Cover of
native plants**



What facilitates the regeneration potential of pine plantations?

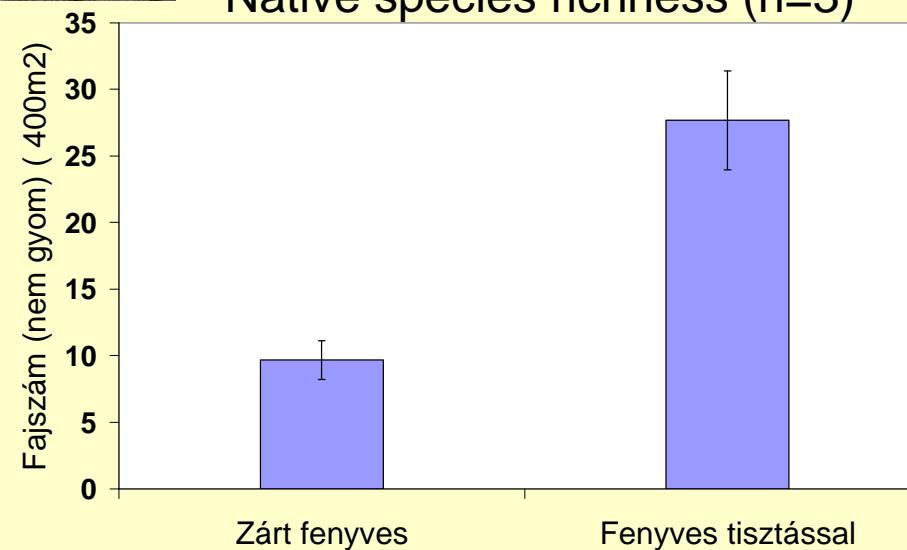
Geomorphology is conserved



The role of canopy openings



Native species richness ($n=3$)



Many species survive even below a closed canopy



Low nutrient content

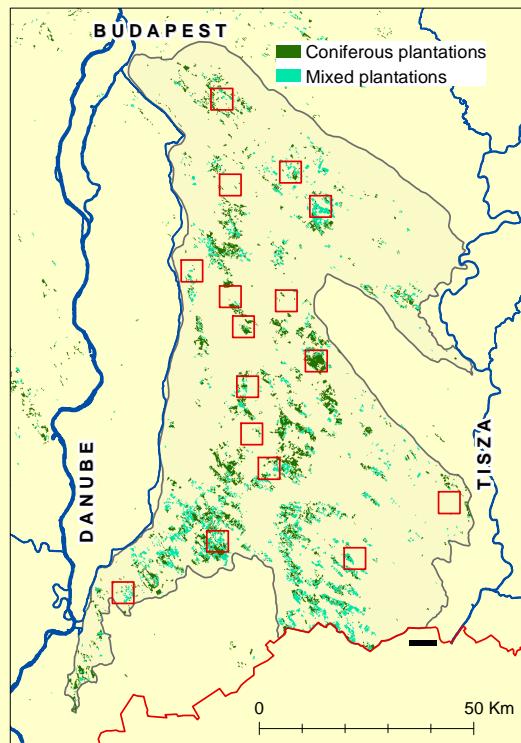


Low amount of weeds

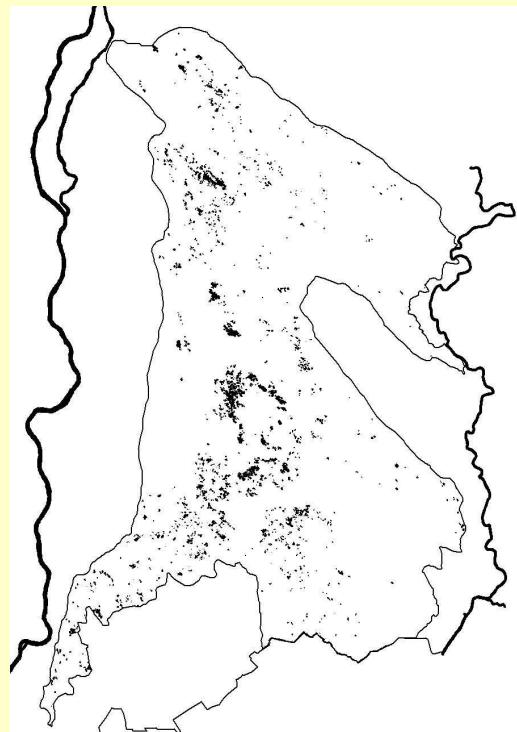


Propagule sources are usually present

pine plantations



remnant sand
vegetation



High fire risk

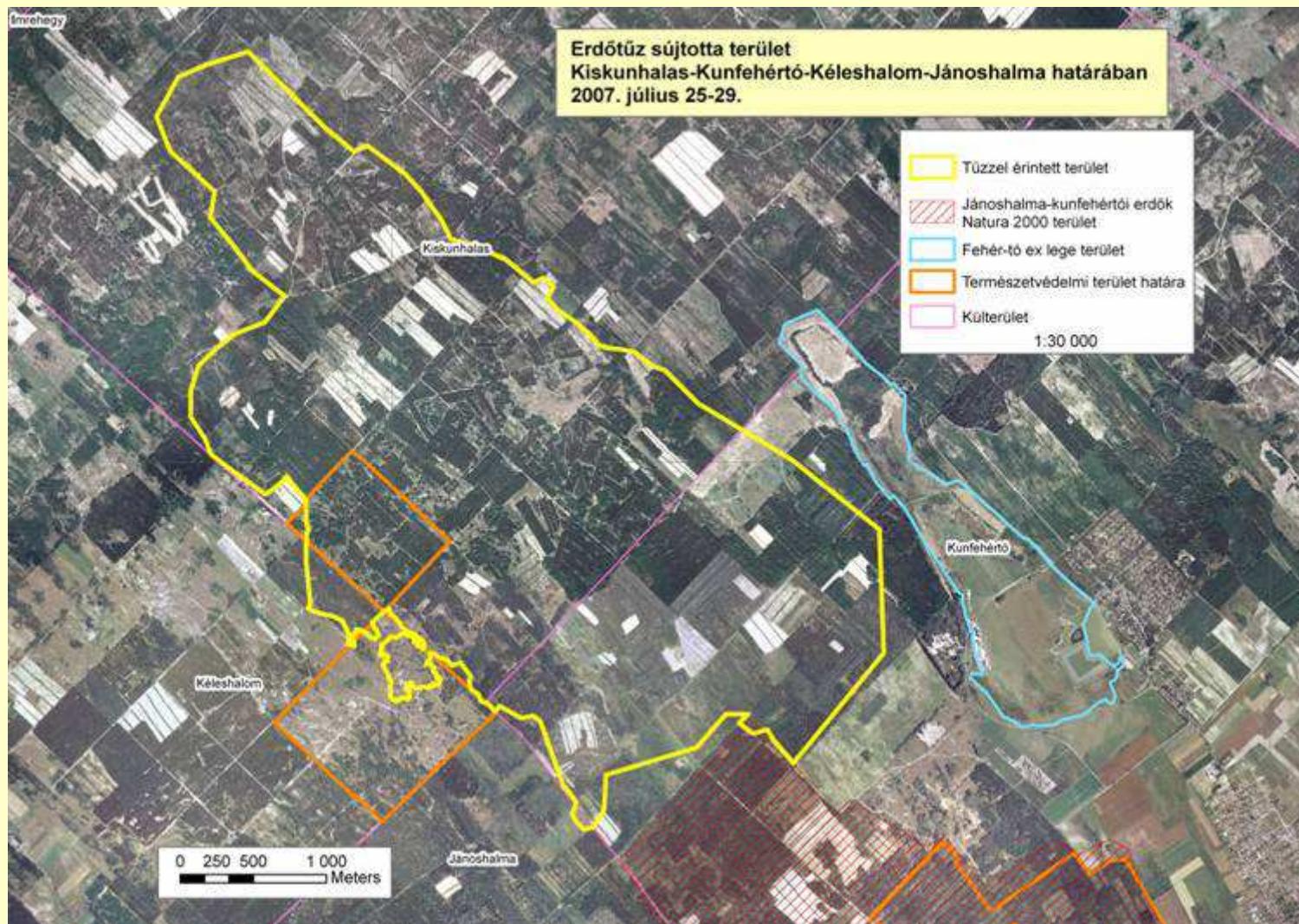


Fotó: KNP

Fire events at the Ásotthalom forestry district, 1990-2000 (based on Polner (2000))

- Ásotthalom forest district: 4710 ha forest, 67% Pine
- Between 1990 and 2000 között 80 (!) documented fire events
- A total of 350 ha woodlands were affected (in four years, it was above 50 ha (1992,1993, 1994, 2000)
- 9.3% of pine plantations burnt down within 11 years
- With a rotation time of 35-40 years, ca. 30% of pine plantatons burn down

Kéleshalom 2007

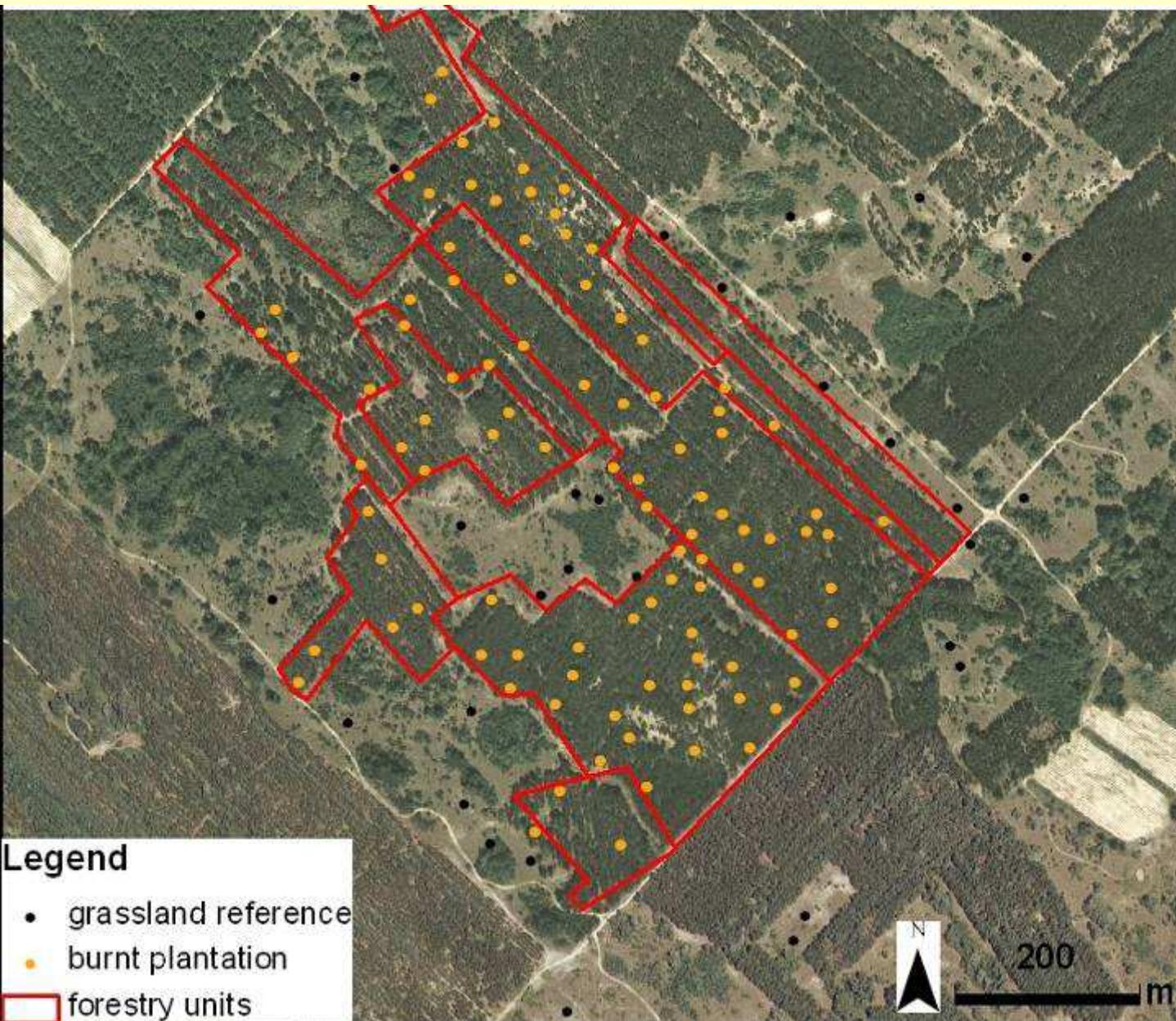


(Forrás: Kiskunsági Nemzeti Park)

Fire at Kéleshalom (2007)

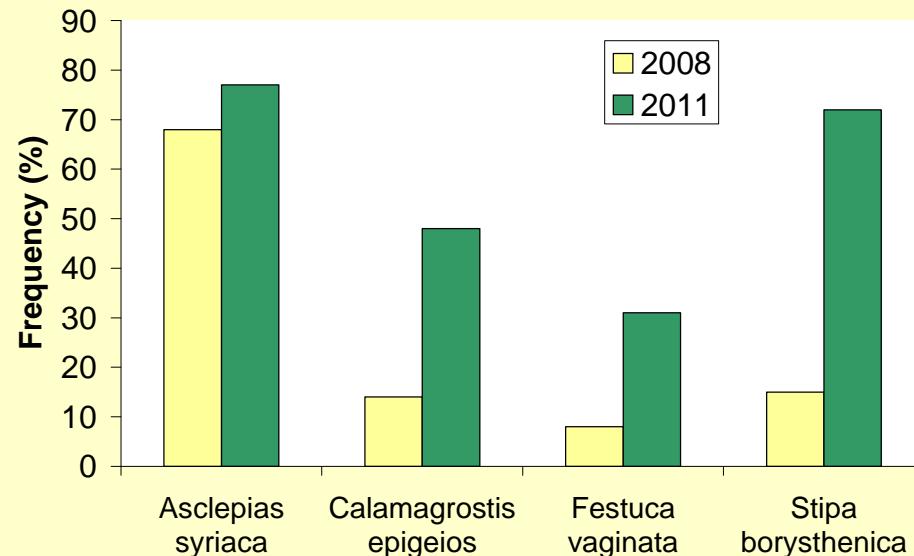


Monitoring recovery: 99+30 plots (16m²)

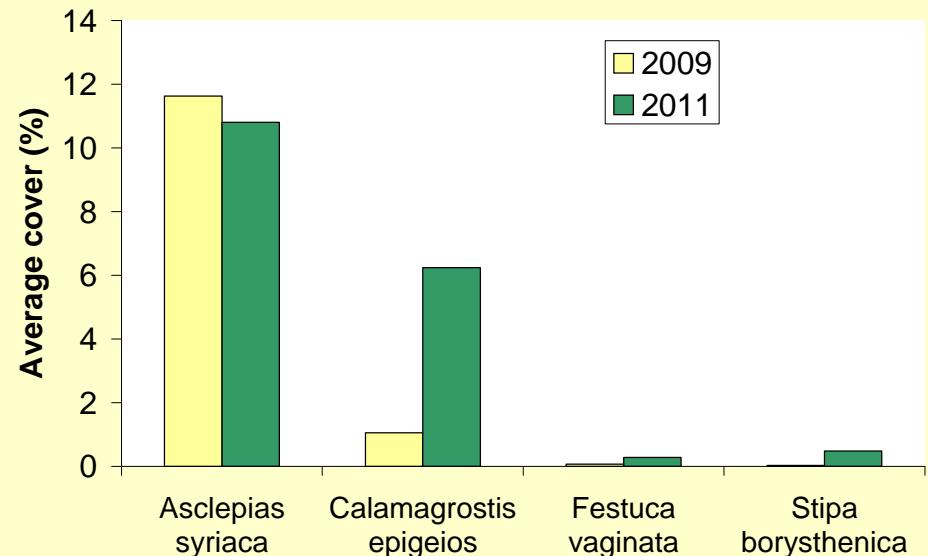


Changes in the frequency and cover of key native and alien species

Frequency



Cover











Conyza canadensis



Asclepias syriaca



Calamagrostis epigeios

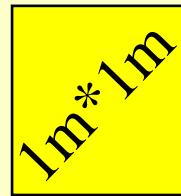
Experiment: can we facilitate recovery?

**Litter removal
(pine needles)**



**Seed addition
(Festuca + Stipa)**

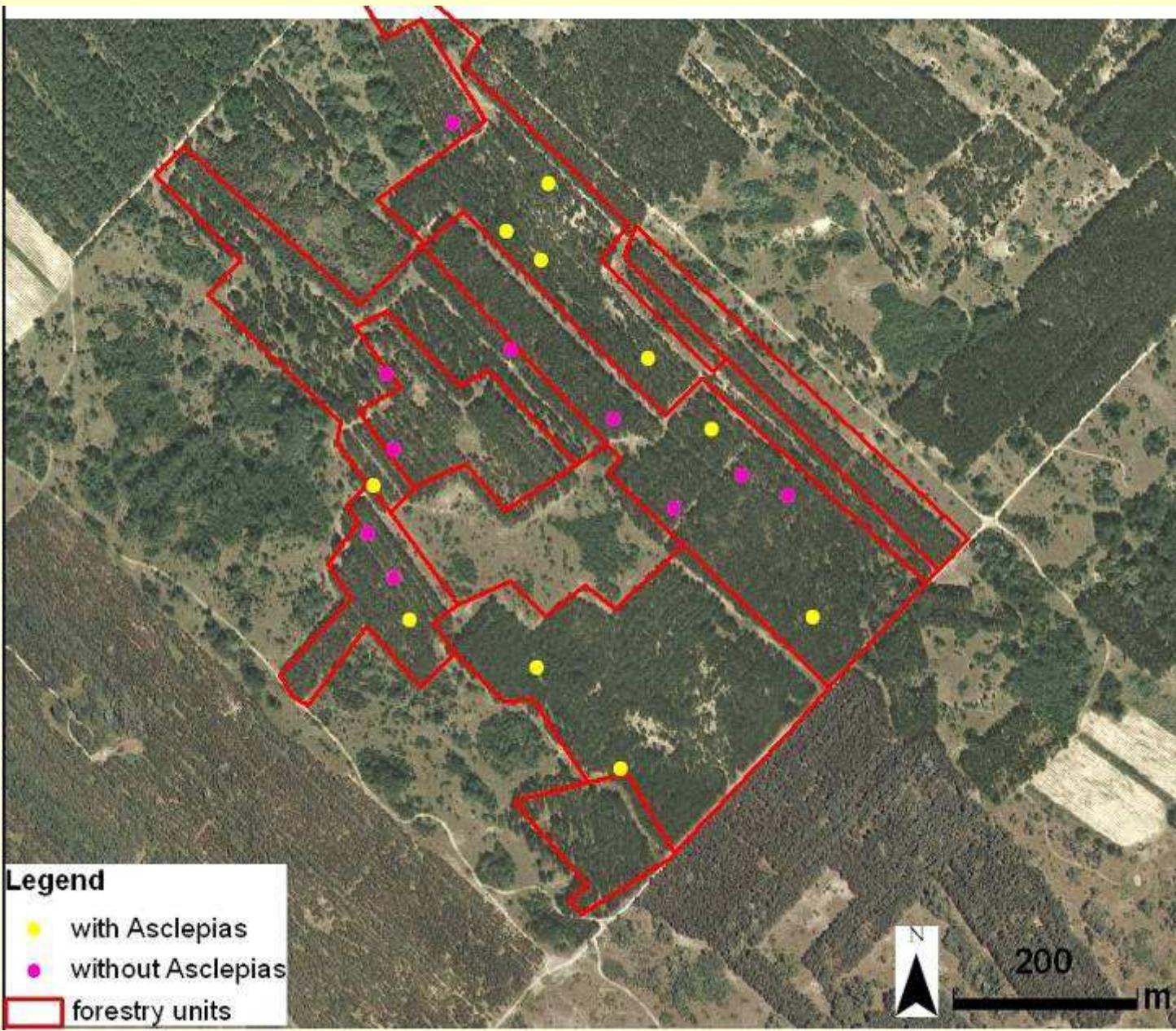
**Litter removal
+ seed addition**



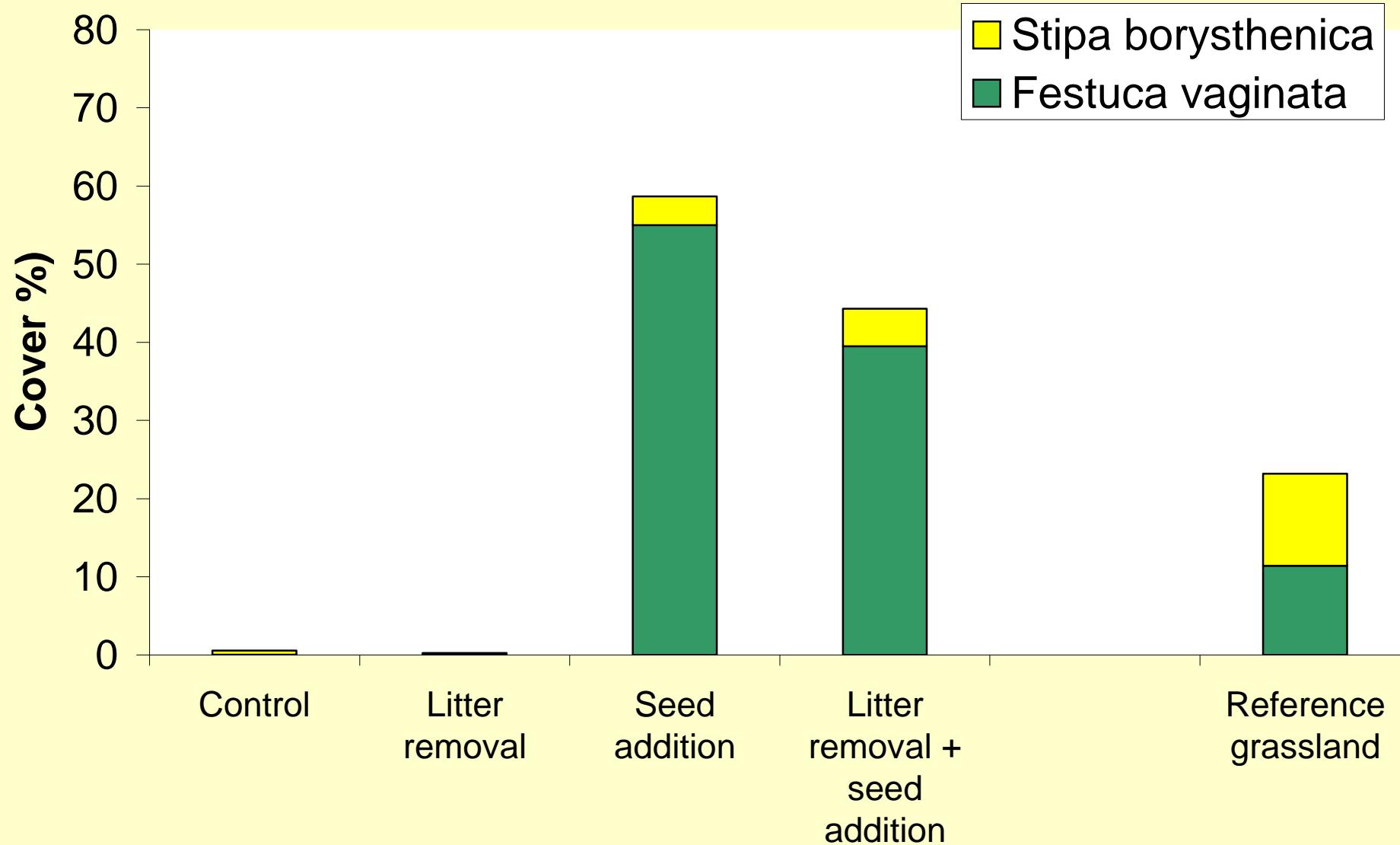
Control

- 10 replicates where *Asclepias* is present and 10 replicates where *Asclepias* is absent

Study sites

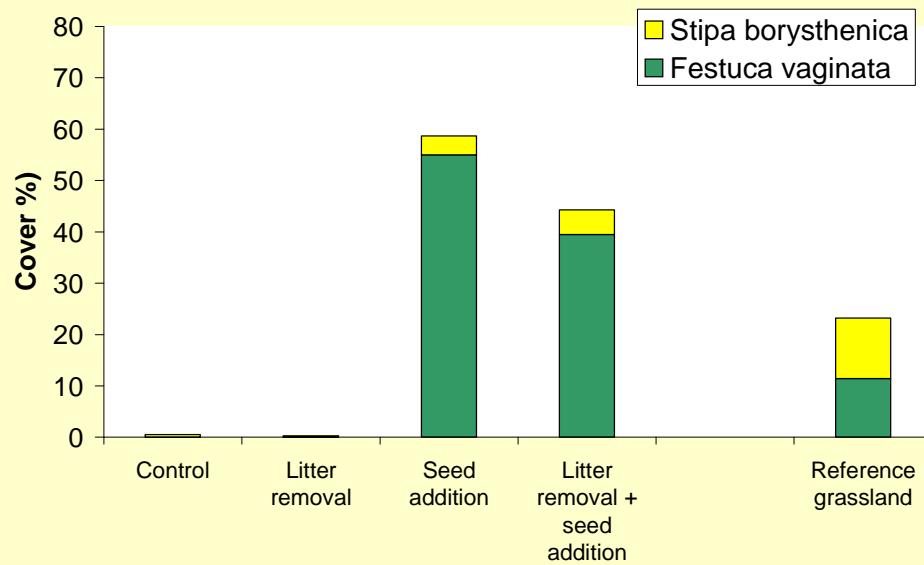


Cover of dominant grasses in the treatments (without *Aclepias*)

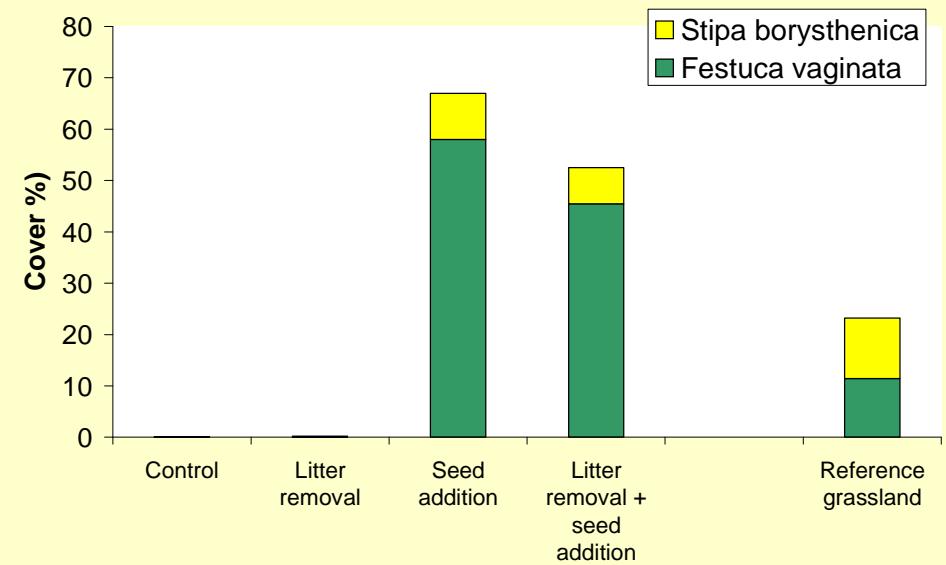


Cover of dominant grasses in the treatments

Without Asclepias



With Asclepias



2010



2011



Festuca establishment was not affected by the presence of *Asclepias*



Conclusions

- pine plantations occupy large areas of previous sand steppe habitats
- several factors facilitate the recovery of Pine plantations into valuable secondary grasslands
- however, alien and weedy species may cause problems in future restoration works
- restoration efforts should be built on and facilitate natural regeneration processes
- nature conservation authorities should view pine plantations as potential sites for increasing the extent of natural areas

Thank you for your attention!

