

Restoration management of Pannonic sand steppes and xerotermophilous grasslands overgrown by alien wood species in Western Slovakia

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> Project LIFE10 NAT/SK/000083: Restoration of endemic pannonic salt marshes and sand dunes in Southern Slovakia Obnova endemických panónskych slanísk a piesočných dún na južnom Slovensku



Project: LIFE10 NAT/SK/083 PANNONICSK -Restoration Of Endemic Pannonic Salt Marshes And Sand Dunes In Southern Slovakia

Duration: Sep. 2011 – Dec. 2016

<u>Beneficiary:</u> Daphne – Institute Of Applied Ecology <u>Partners:</u> BROZ, State Nature Conservancy

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Restoration of Endemic Pannonic Salt Marshes and Sand Dunes in Southern Slovakia



Compiled by @ State Nature conservancy of Slovak Republic, 2010

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Restoration of Endemic Pannonic Salt Marshes and Sand Dunes in Southern Slovakia

<u>SCI – SKUEV 0067 Čenkov:</u>

- <u>6120* Xeric sand calcareous grasslands</u>
- <u>6260* Pannonic sand steppes</u>
- <u>91N0* Pannonic inland sand dune thicket (Junipero-</u> <u>Populetum albae)</u>
- most significant locality of psamophytes in the country
- the only locality in Slovakia for critically endangered plant species - Iris humilis subsp. arenaria, Colchicum arenarium, Ephedra distachya and Alkanna tinctoria





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Restoration of Endemic Pannonic Salt Marshes and Sand Dunes in Southern Slovakia

<u>SCI – SKUEV 0067 Čenkov – Invasive wood species and proposed</u> management

- unsuitable forest management and strict protection regime_resulted into heavy infestation by invasive alien wood species: *Ailanthus altissima*, *Robinia pseudoaccacia*, *Celtis occidentalis*, *Gleditschia triacanthos*, *Padus serotina*
- Detailed mapping of Ailanthus stands + review of possible eradication techniques = planning of management measures:
 A non-selective removal of Ailanthus altissima individuals
 B selective removal of fertile individuals
- Drilling/hatching and injection of herbicide (glyphosate)
- 60 ha of forest stands managed







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Restoration of Endemic Pannonic Salt Marshes and Sand Dunes in Southern Slovakia

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current situation by SDF



current situation by map



proposal designed on LIFE+ investigation





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Effect of herbicide is visible within 1-2 weeks dependent on the weather conditions



Restoration of meadows at SCI Devinska Kobyla – removal of Black Locust







aplikovanej ekológie





LIFE10 NAT/SK/080 NATURA2000BA -Restoration of NATURA 2000 sites in crossborder Bratislava capital region

Duration: 1.1.2012 – 31.3.2017







<u>SCI – SKUEV 0280 Devínska Kobyla:</u>

6210* Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)

6110* Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*

- 6240* Sub-Pannonic steppic grasslands
- 40A0* Subcontinental peri-Pannonic scrub

fragments of native rocky steppes, secondary grasslands and forest steppe communities on carbonate substrate with high biodiversity



SCI Devínska Kobyla – past and present

Past: grazing of sheep and goats (steppes covered 87% of NNRarea)

1964: National Nature Reserve – strict protection regime (102 ha), planting of non-native trees (mainly *Pinus nigra, Fraxinus ornus*) Meadows overgrown by trees and shrubs, invasion of Black Locust along the whole reserve(area of steppes decreased to 33%).

Present: large-scale restoration of meadows (removal of trees and shrubs, 60 ha), re-establishment of small herds of goats.

Special approach to invasive species!





SCI Devínska Kobyla – Management of Invasive Black Locust

- Detailed mapping of Black Locust trees with diameter > 5 cm on 70ha of SCI -> 3500 trees on 25 ha
- 2. Review of possible eradication techniques
- 3. Selection of management measures: Drilling and injection of herbicide (glyphosate)





SCI Devínska Kobyla – Method of Black Locust eradication

- 1. Timing: July September 2015
- 2. Management of trees with diameter > 5cm
- 3. Drilling of 6mm holes by drilling machine
- 4. 1 hole per 7cm of tree perimeter, drilled under 45°
- Injection of 2ml of concentrated glyphosate in each hole
- 6. Holes left open
- 7. Injected trees marked by spray











Black Locust eradication – lessons learned

- 1. Work time: approx. 1 tree in 3min
- 2. Trees lost leaves within 1-2 weeks after treatment
- 3. Method was effective only till end of September
- 4. Biggest problem = technical equipment / batteries in drilling machines ran out quickly (hard wood)
- 5. Method works only if implemented correctly hole each 7cm around the circumference of the tree







- Direct observation after treatment trees with leaves were treated repeatedly
- 3 monitoring plots 20 x 20 m established
- botanical survey "before treatment" done
- 2016 collection of first data "after treatment"
- spring survey trees without buds



Eradication of *Ailanthus altissima* and *Robinia pseudoacacia* – lessons learned



- Cutting of trees and sprouts without application of herbicide supports vegetative regeneration, i.e. worsens the infestation
- Drilling or hatching combined with injection of herbicide is effective way of eradication
- Biomass has to be removed from the site
- Introduction of grazing after removal of invasive alien species is inevitable for long-term conservation of sand dunes and xerotermophilous grasslands









Thank you!

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