Removal of invasive plant species in SW Slovakia: results and challenges

Bratislavské regionálne ochranárske združenie
Regional association for nature conservation

Pavol Littera, Barbora Vitázková

Target area

Pannonian bioregion, SW Slovakia:

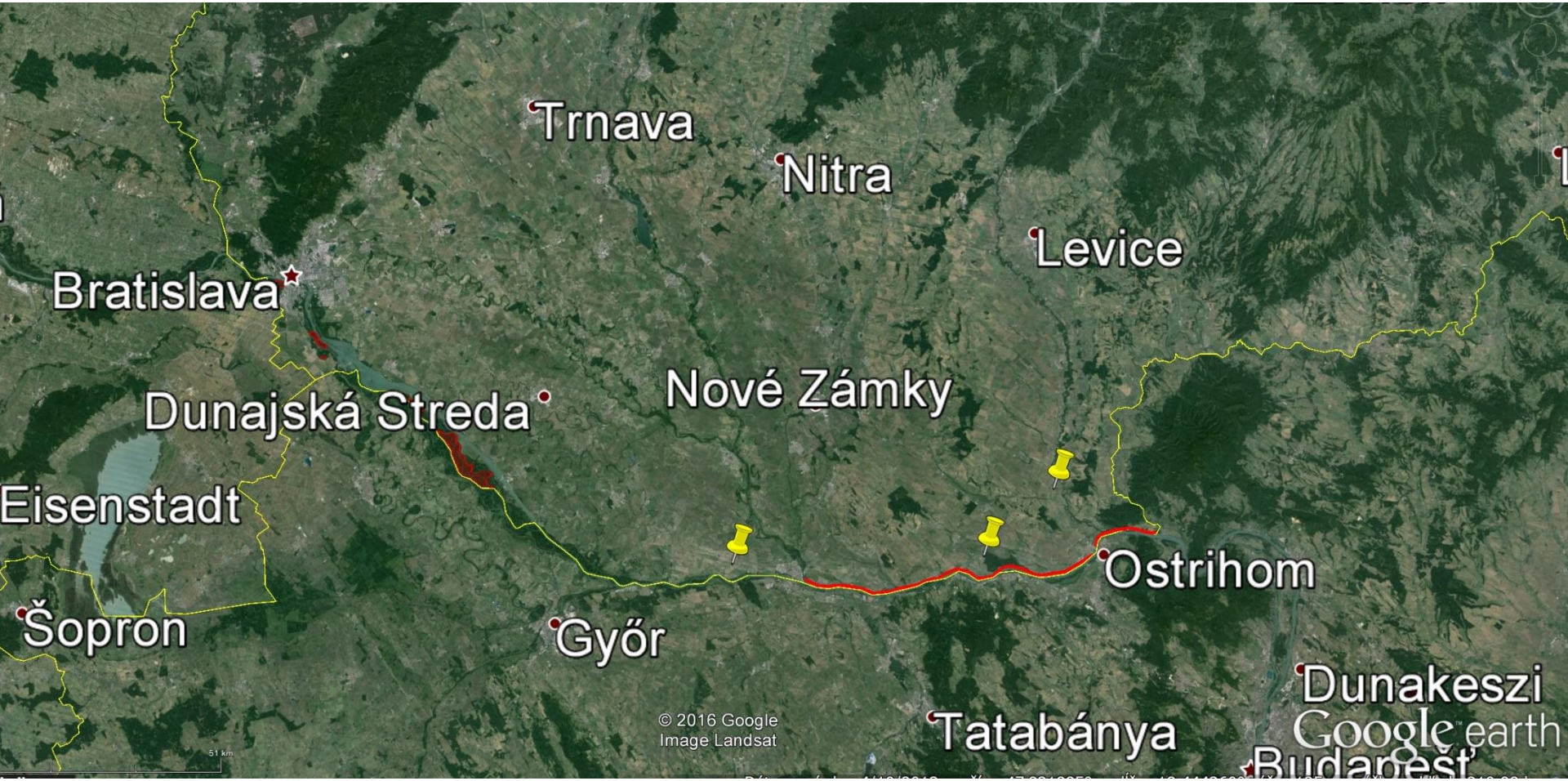
- **Danube floodplains (inundation): Bratislava-Ipoly**

  mostly alluvial forest habitats, degraded by intensive forestry in large areas

- Other sites:
  - SCI Pavelské slanisko
  - SCI Kamenínske slaniská
  - SCI Čenkov

  (salt steppe and sand dune habitats)

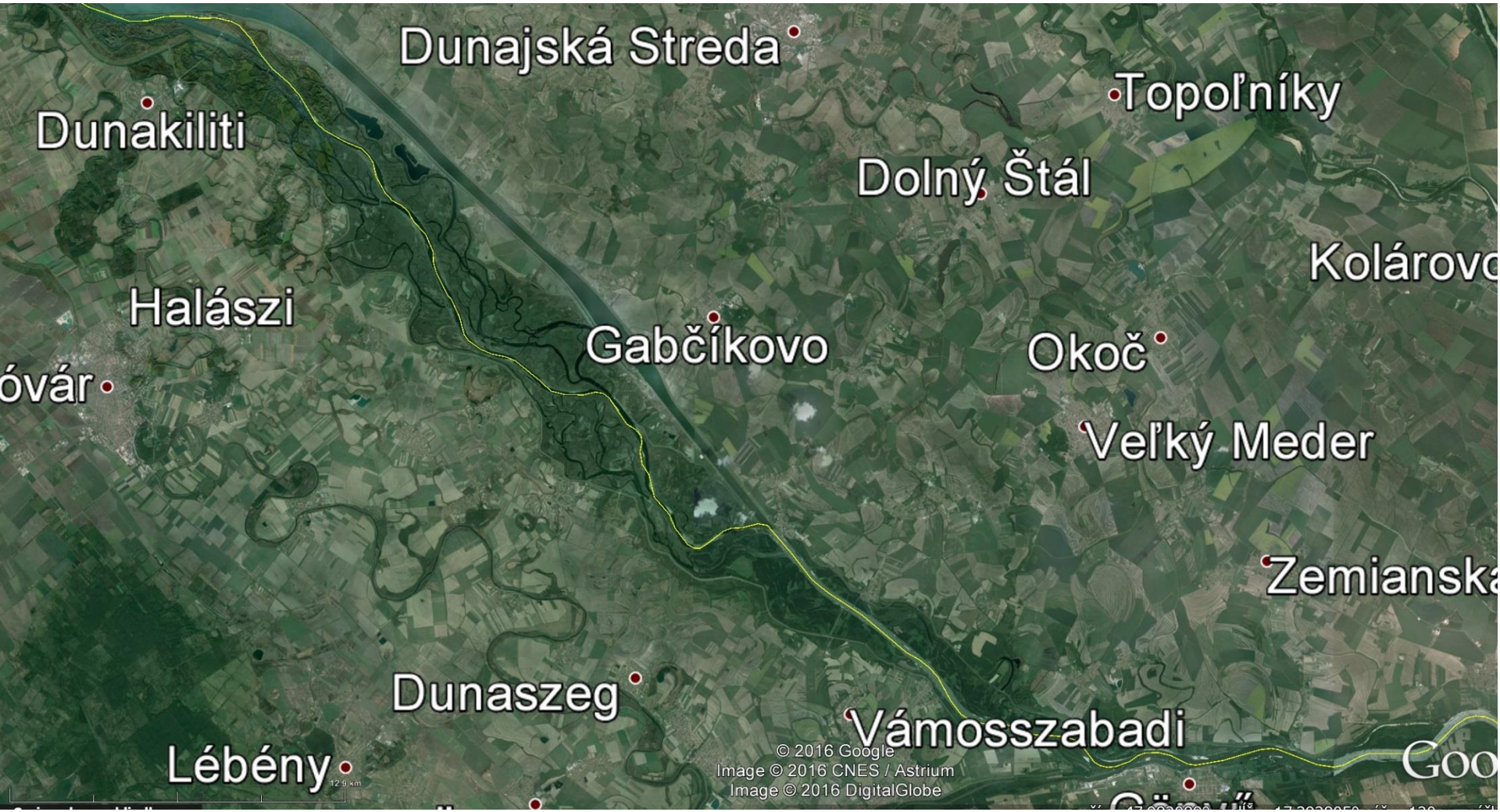
Target area


Trnava
Nitra
Levice
Bratislava
Nové Zámky
Dunajská Streda
Eisenstadt
Ostrihom
Šopron
Győr
Dunakeszi
Tatabánya
Budapest
© 2016 Google
Image Landsat
Google earth

Step 1: mapping of invasives occurence

- All forest stands manually surveyed
- Winter mapping – better visual conditions
- Information on selected IAS stored using GPS:
  - exact location
  - species
  - approx. number/area
  - young or fruiting individuals
- Data from field mapping evaluated, graphical layer prepared and analysed

Mapping area 1



Mapping results: distribution of invasives

Species	Section of Danube floodplains	Degree of infestation
Negundo aceroides	Bratislava-Ipoly	high
Fraxinus pennsylvanica	Bratislava-Ipoly	high
Solidago sp.	Bratislava-Ipoly	very high
Aster sp.	Bratislava-Ipoly	high
Impatiens glandulifera	Bratislava-Ipoly	high
Fallopia sp.	Bratislava-Ipoly	single patches, various size
Ailanthus altissima	Bratislava-Gabčíkovo	medium-high
	Gabčíkovo-Ipoly	scattered
Amorpha fruticosa	Komárno-Ipoly	medium-high
	Doborgaz	sigle points
Budleya davidii	Bratislava-Gabčíkovo	low-medium
Asclepias syriaca	Bratislava-Nagy Lél	single points, starting to spread

Treated species

- ***Ailanthus altissima***
- ***Buddleia davidii***
- ***Amorpha fruticosa***
- *Asclepias syriaca* – selected patches with highest risk of spreading
- *Fallopia* sp. – selected patches

Strategy of treatments

- Selection of target species
  - widespread species evaluated as not possible to remove completely (*Negundo aceroides, Fraxinus pennsylvanica*)
  - focus on species with high speed/risk of spreading (*Ailanthus altissma, Amorpha fruticosa, Buddleya davidii, Asclepias syriaca*)

- Selection of target area – start with small and isolated sources, continue towards bigger

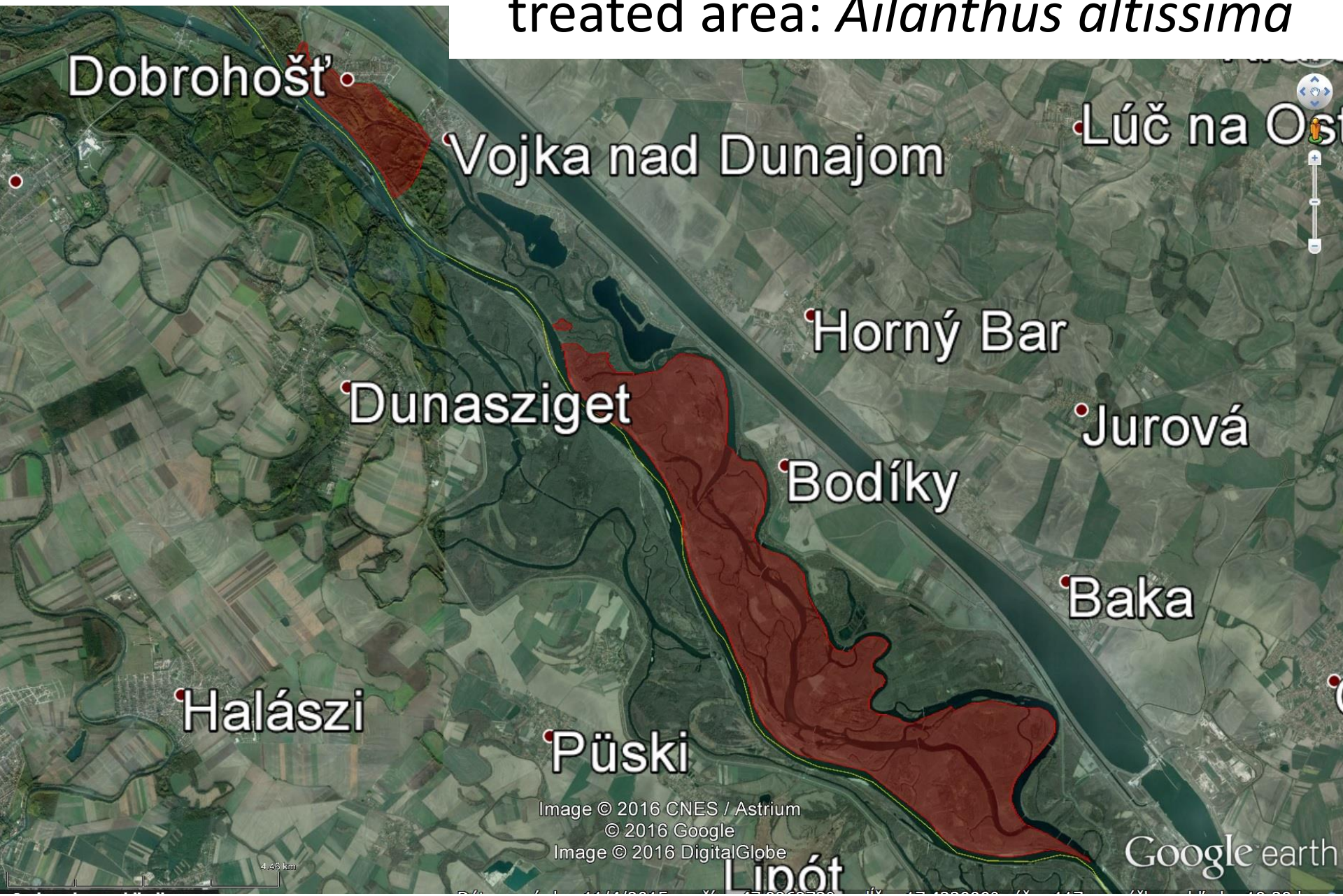
- Try to create „invasive free zones“

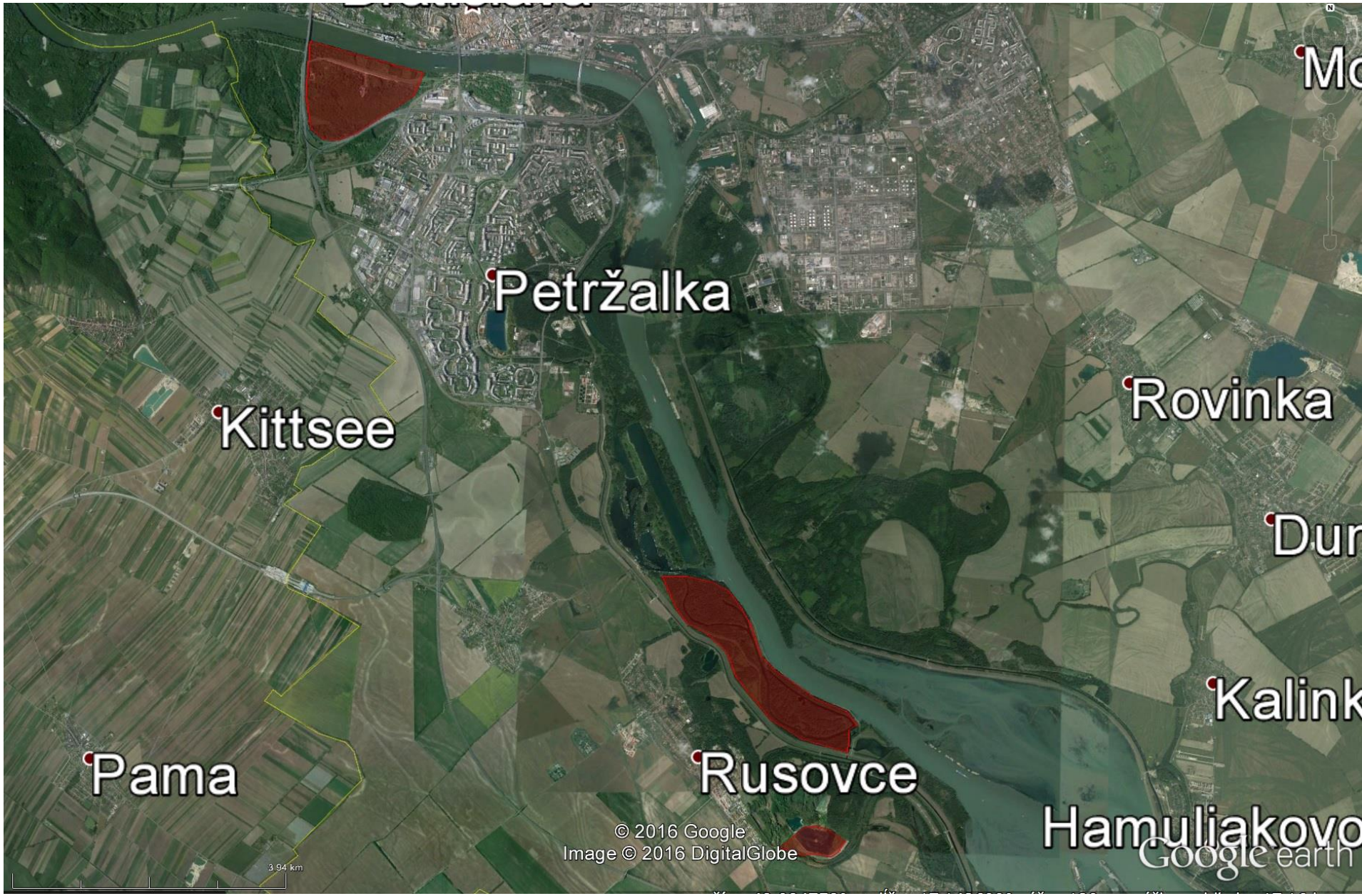
- Sources with high risk of spreading were given priority (e.g. bordering with clearcuts, forest roads or open gravel patches)

Treated area

- Approx. 2300 ha with invasive plants treated, including 95 km stretch of Danube floodplains
- Treatments in 2014 and 2015

treated area: *Ailanthus altissima*




Petržalka
Kittsee
Rovinka
Pama
Rusovce
Hamuliakovo
© 2016 Google
Image © 2016 DigitalGlobe
3.94 km
Google earth

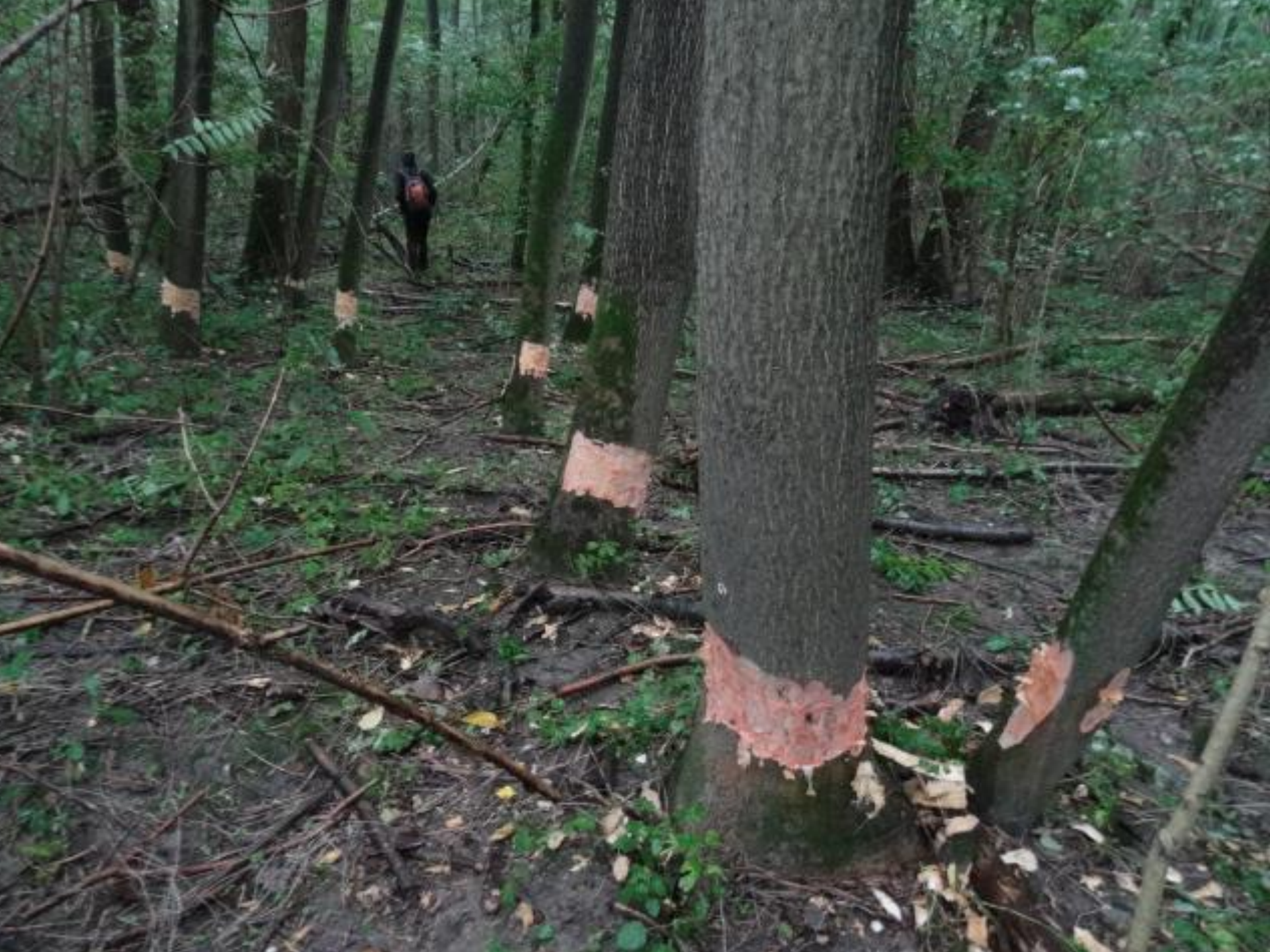
Treatment method

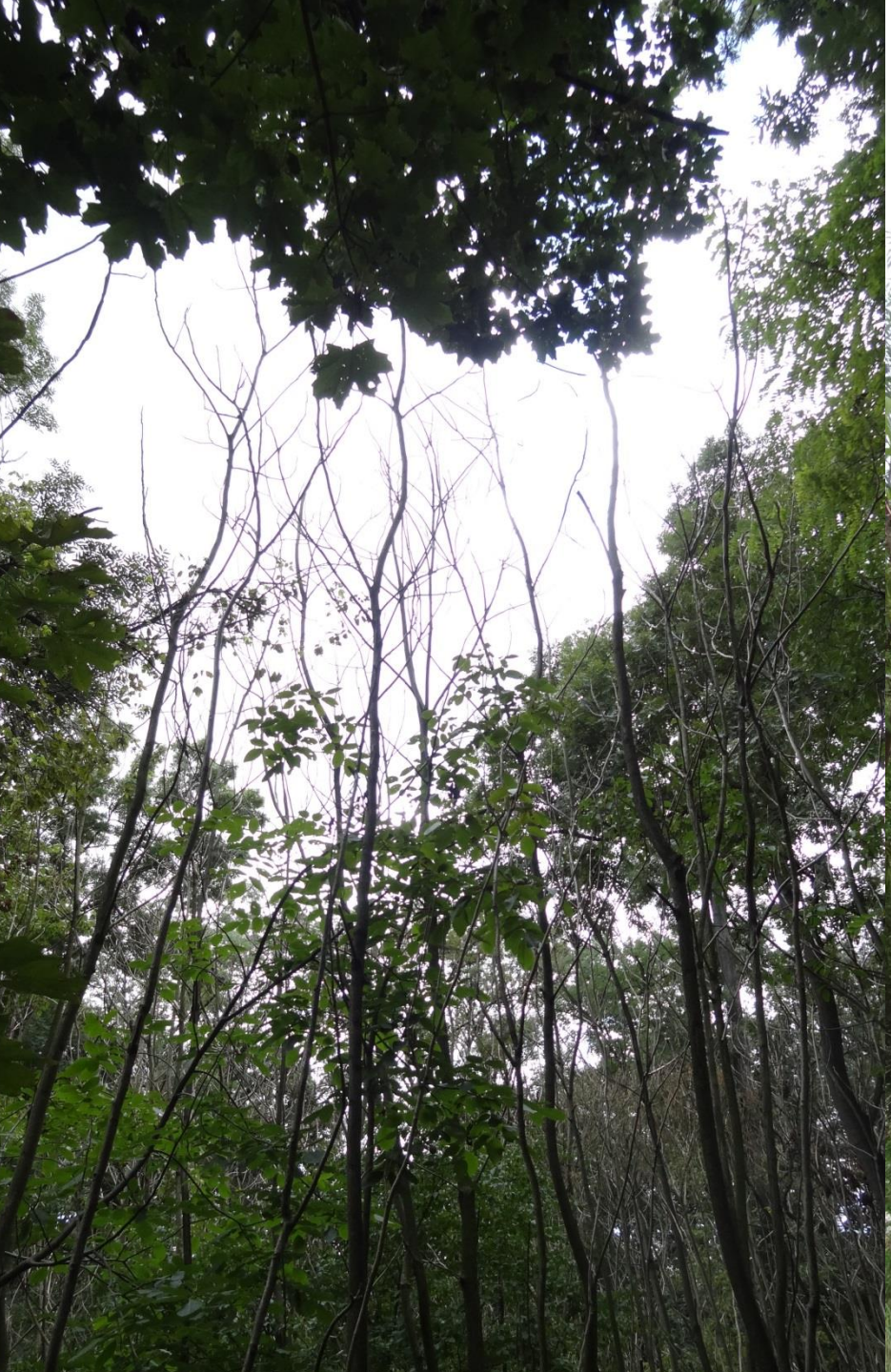
Ailanthus altissima

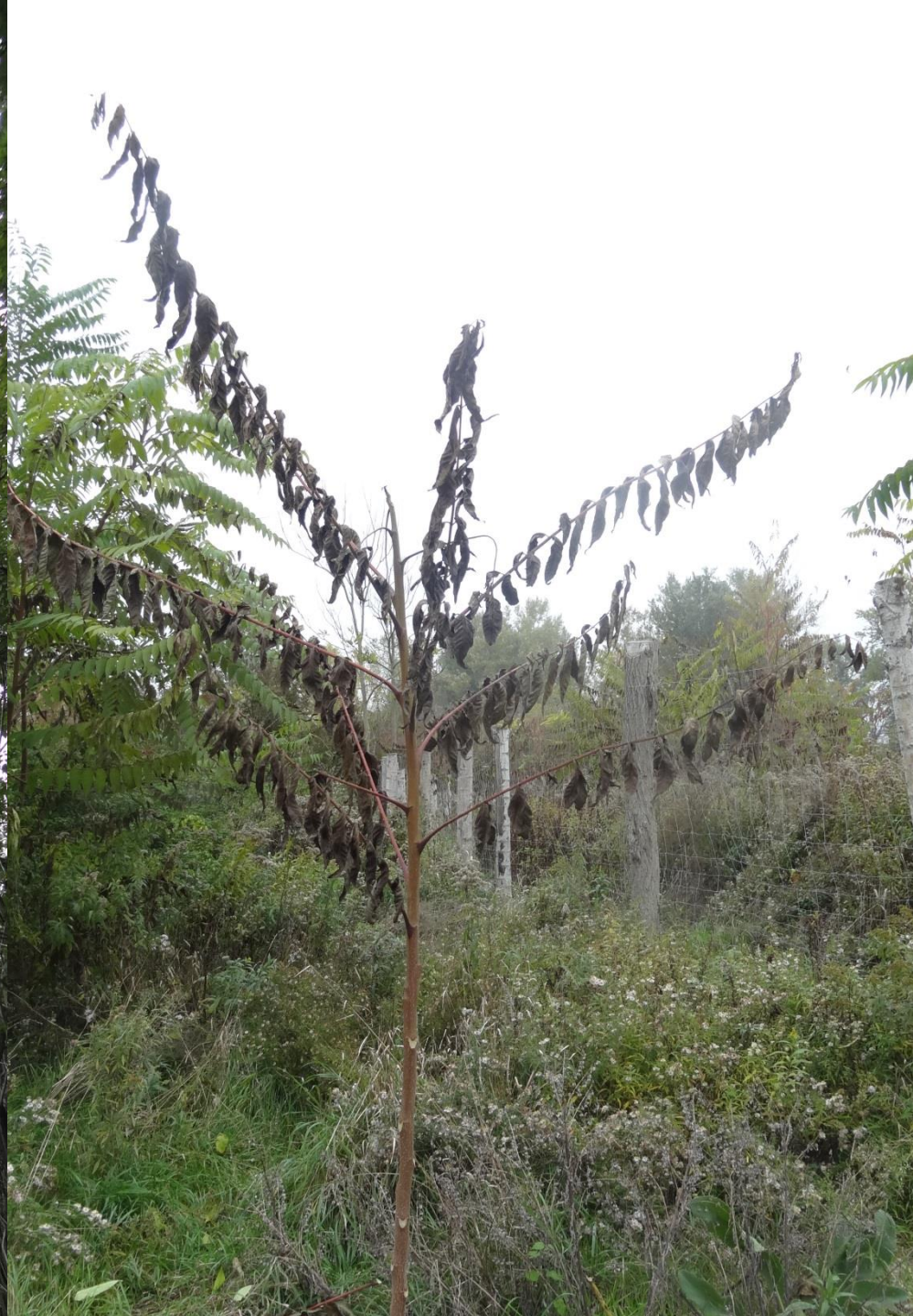
- Trunk injection method (**cuttings** or drilled)
- Roundup Turbo
- Treatment period: summer to autumn
- Added coluoring to mark treated trees
- Seedlings and small trees (where occured) sprayed
- Repeated round of treatments applied following year (where required)

Treatment results

- *Ailanthus altissima*: effectivity 80-98% per treatment (dead, no rejuvenation)







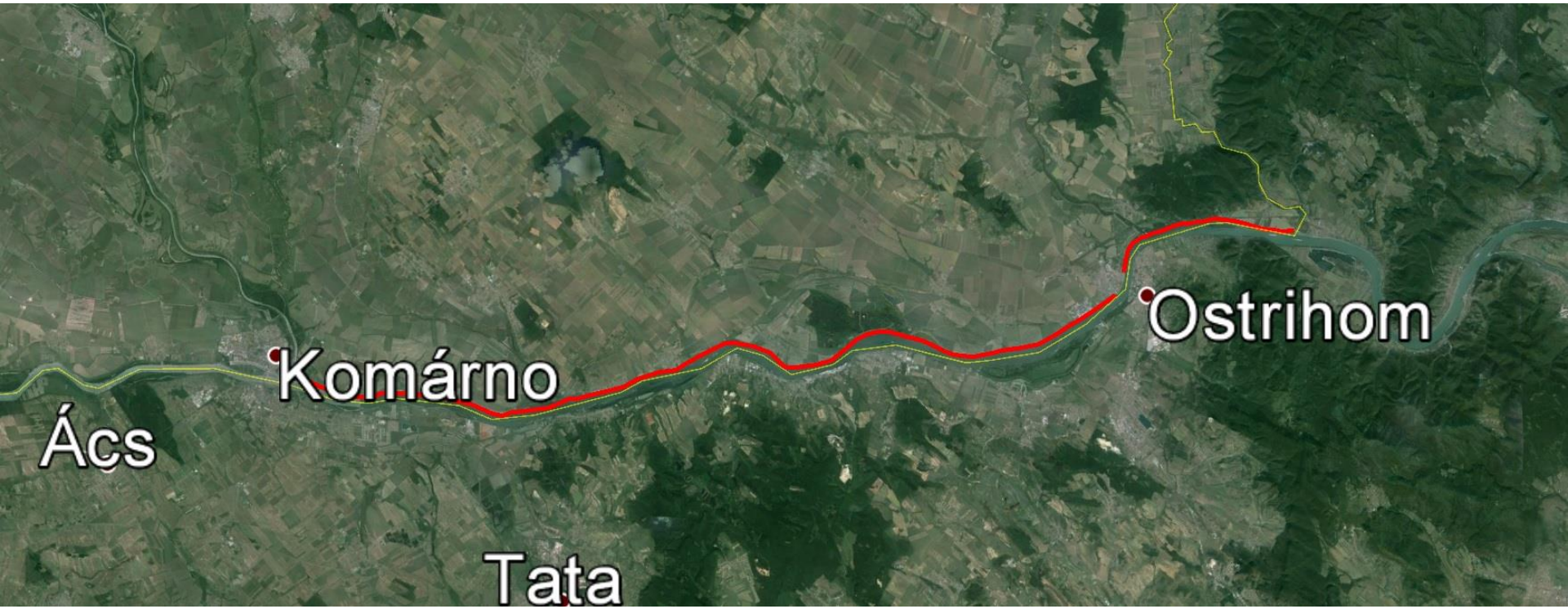
Treatment method – bush invasive species

- *Amorpha fruticosa*
- *Budleya davidii*
- *Fallopia sp.*
- *Asclepias syriaca*

Spraying of diluted herbicide (W = 2%) on leaf surface

Adhesive added (Silwet)

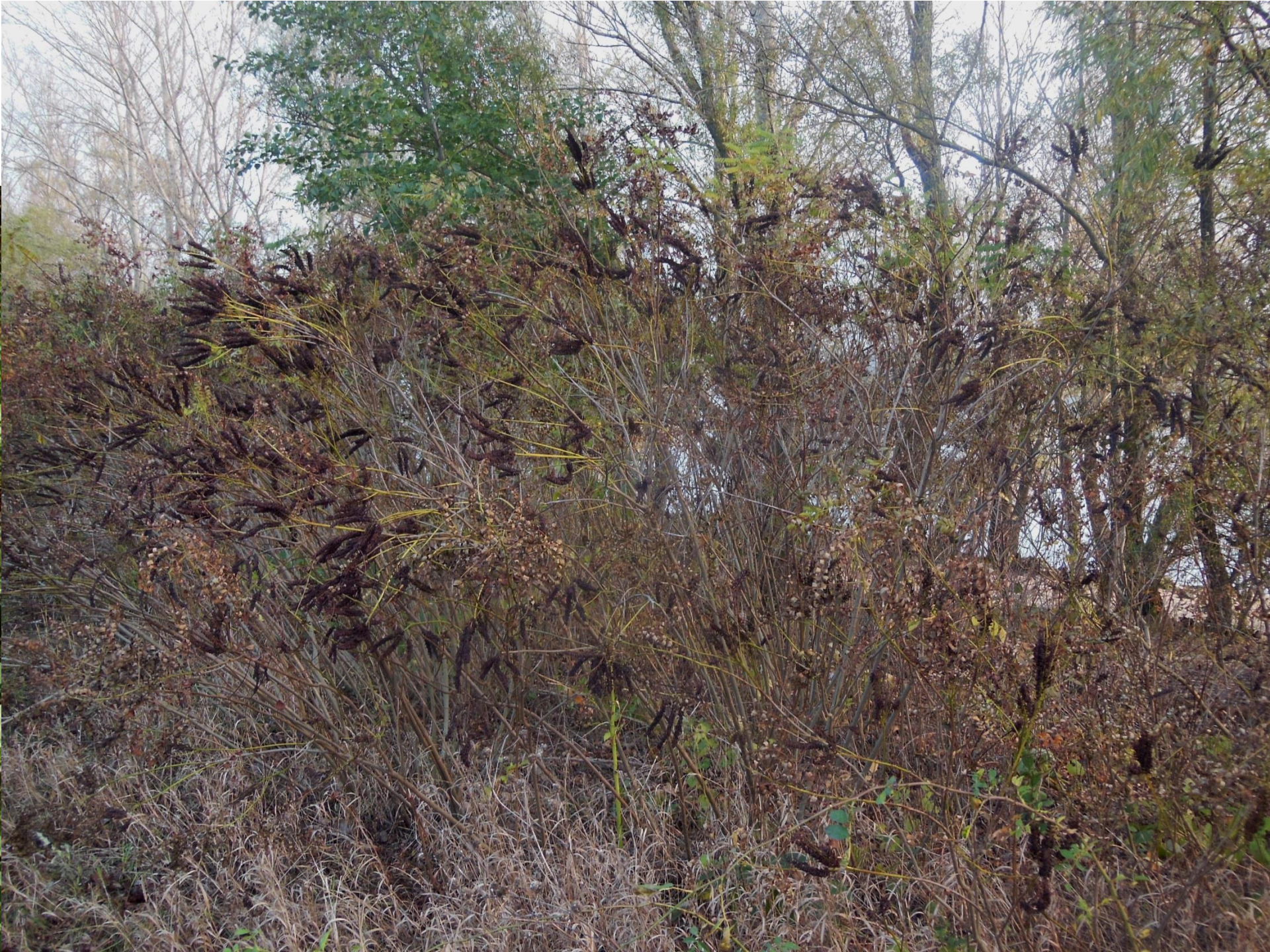
Treated area: *Amorpha fruticosa*



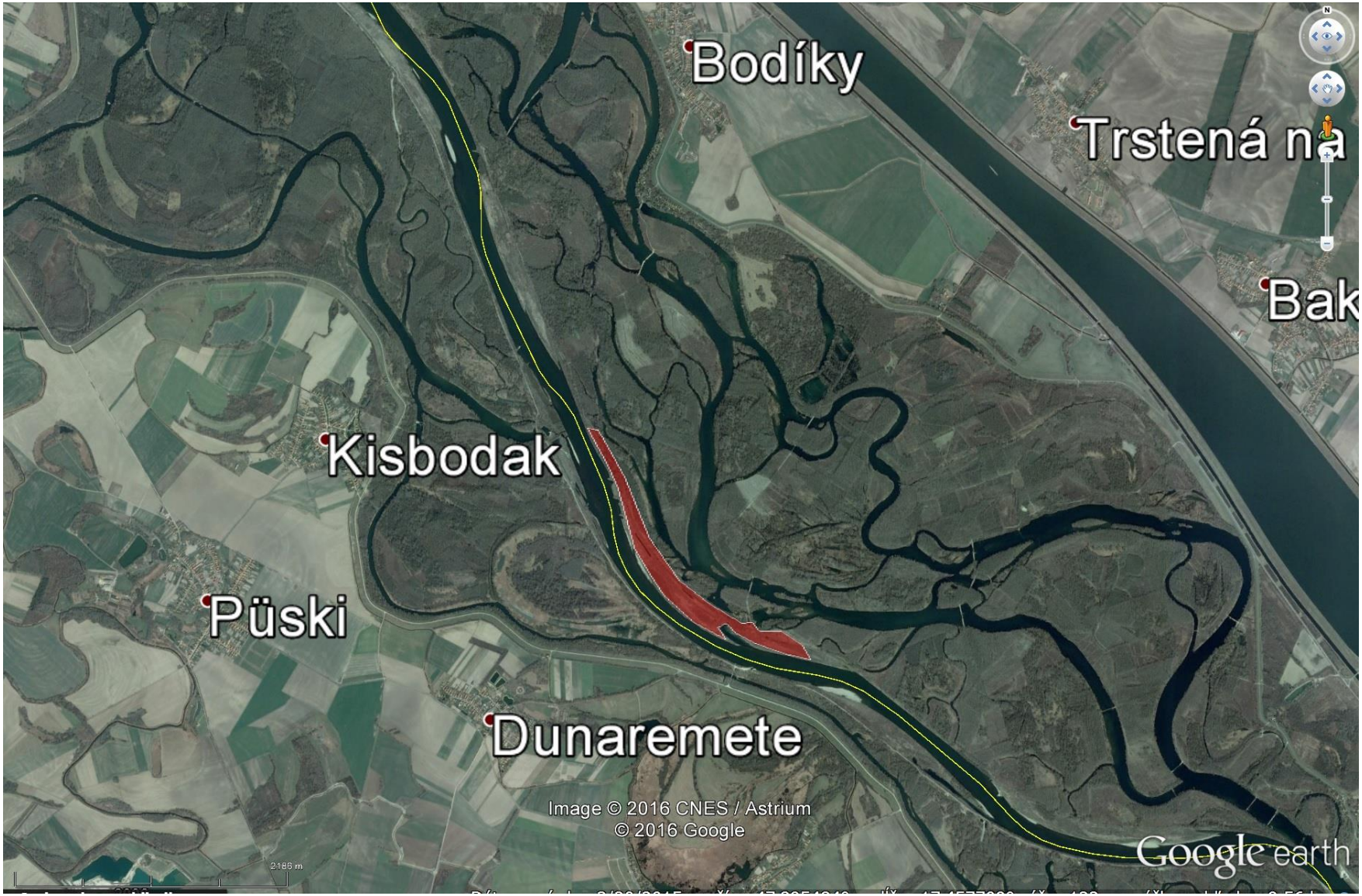
The whole Danube inundation from Komárno (Komárom) to Ipoly river was treated in 2014 and 2015 (also single occurences in other sections)

Amorpha fruticosa, results

- Effectivness 90 - 98 % per treatment
- Problems to reach middle sections in some dense growths
- Rejuvenation from seeds in some places (both from seedbank, possibly also from those brought by Danube)



Treatment area: *Buddleya davidii*



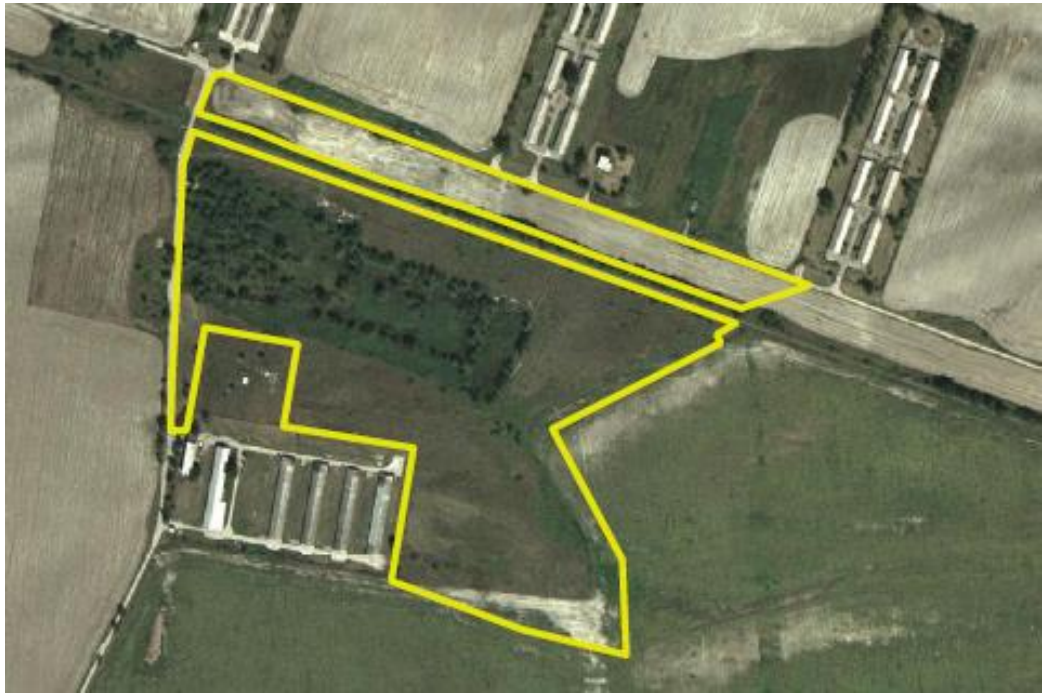
+ smaller patches near Bratislava

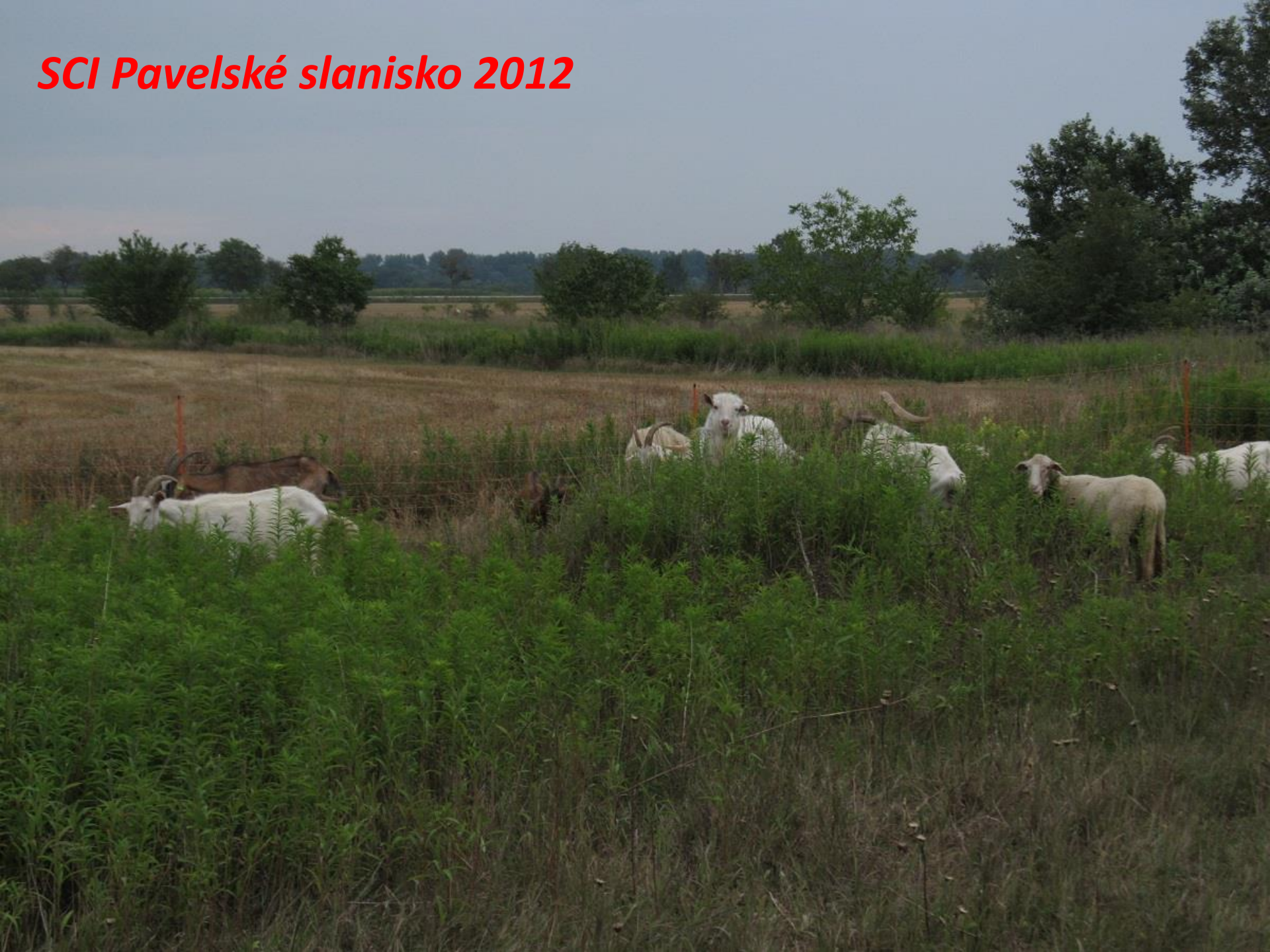
Buddleia davidii, results

- Effectivness 90 - 95 %
- Problems to reach middle sections in dense growths
- Rejuvenation from seeds in some places

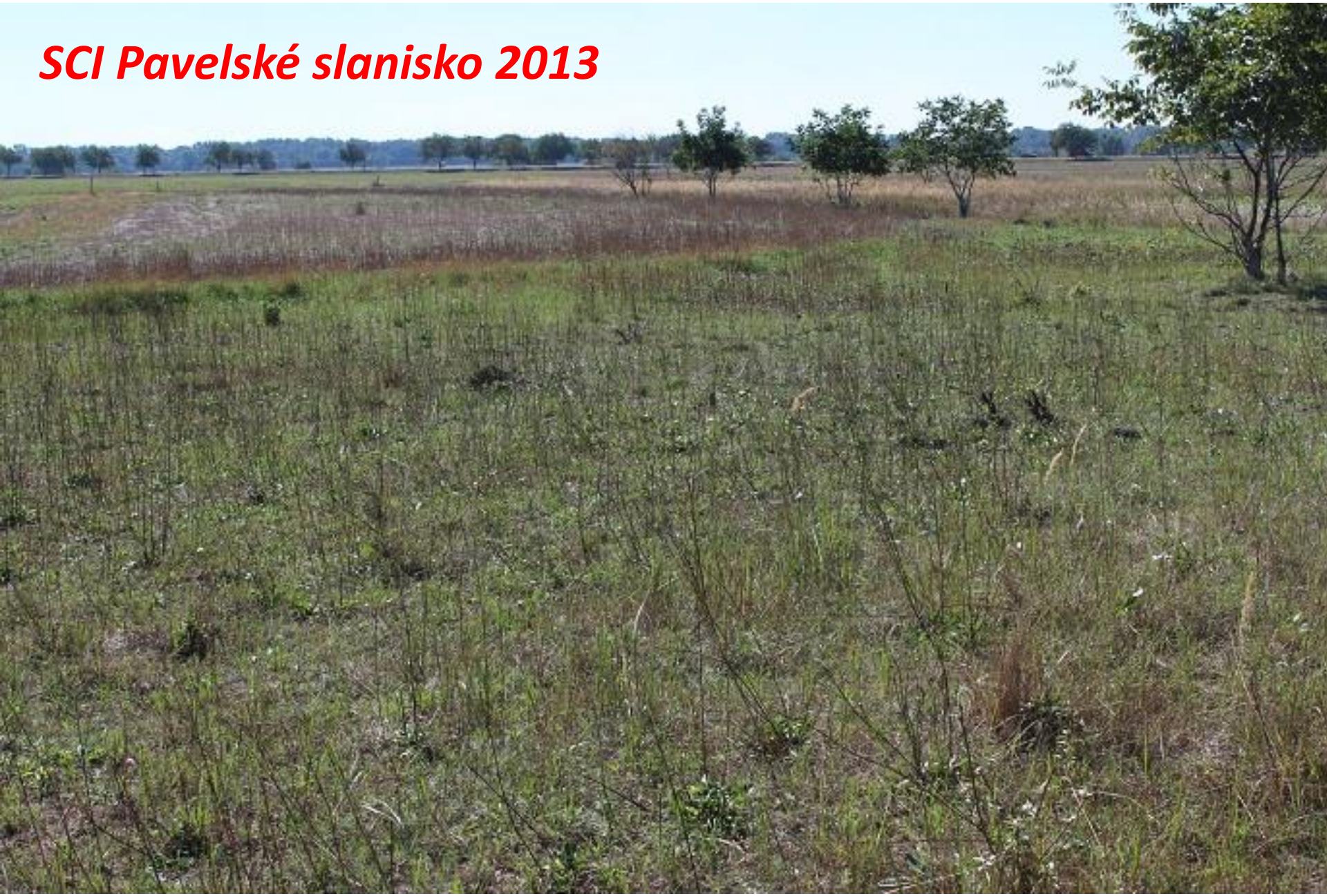
Removing of *Solidago* sp. and *Aster* sp. by grazing

- SCI Pavelské slanisko: pannonic salt steppe habitats; 18,6 ha
- Occurence of *Solidago gigantea* and *Aster Novi-Belgii*
- In past used for grazing, abandoned for more than 30 years




SCI Pavelské slanisko 2012

SCI Pavelské slanisko 2013



Presently *Solidago* sp. is almost completely suppressed

Communication with stakeholders

- **Hunters:** Red deer hunting season – didn´t want to allow any activity in certain places
- **Landowners:** important to explain the situation (international project, removing only *Ailanthus*, not other invasives, which are used for firewood (e.g. *Negundo, Fraxinus pennsylvanica*)
- **Foresters:** important to explain and teach them new methods + to incorporate them into forest management plans (2005: to ring all the *Ailanthus*, 2015: to inject *Ailanthus* and leave standing min. 1 yr. after injection)
- **Policy:** updating the list of forbidden invasives – *Amorpha fruticosa* and *Ailanthus altissima* recently added = planting forbidden by law (e.g. on highway embankments, city parks etc.)

Summary

- Trunk injection method was the most effective for tree species
- *Solidago sp.* and *Aster Novi-Belgii* could be effectively removed by intensive grazing
- Type of herbicide used was important
- Communication with stakeholders (mainly foresters)

Challenges for future

Reachable target: remove *Ailanthus altissima, Amorpha fruticosa, Budleya davidii* from whole inundation (SVK part) or create „invasive-free“ zones as large as possible

- Monitoring of treated area + repeated treatments required
- Isolate *Ailanthus* from/in Vojka and Biskupice sections, if possible suppress completely

- More sustainable forestry practices
- Grazing in floodplain area including mature forests
- International cooperation (HU, AT) if possible
- Proper management of catchment area (where possible) – esp. contact zones of inundation with urban areas, highways, railways and other invasive spreading sources/routes

THANK YOU FOR ATTENTION

Contact: Regional association for nature conservation
Bratislavské regionálne ochranárske združenie

littera@broz.sk, tel.: +421-948-177 555, www.broz.sk