Riparian forest communities along watercourses in the Sutjeska National Park (SE Bosnia and Herzegovina)

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COST CONVERGES (Action CA16208)

Kraków, Poland, 21 May 2018

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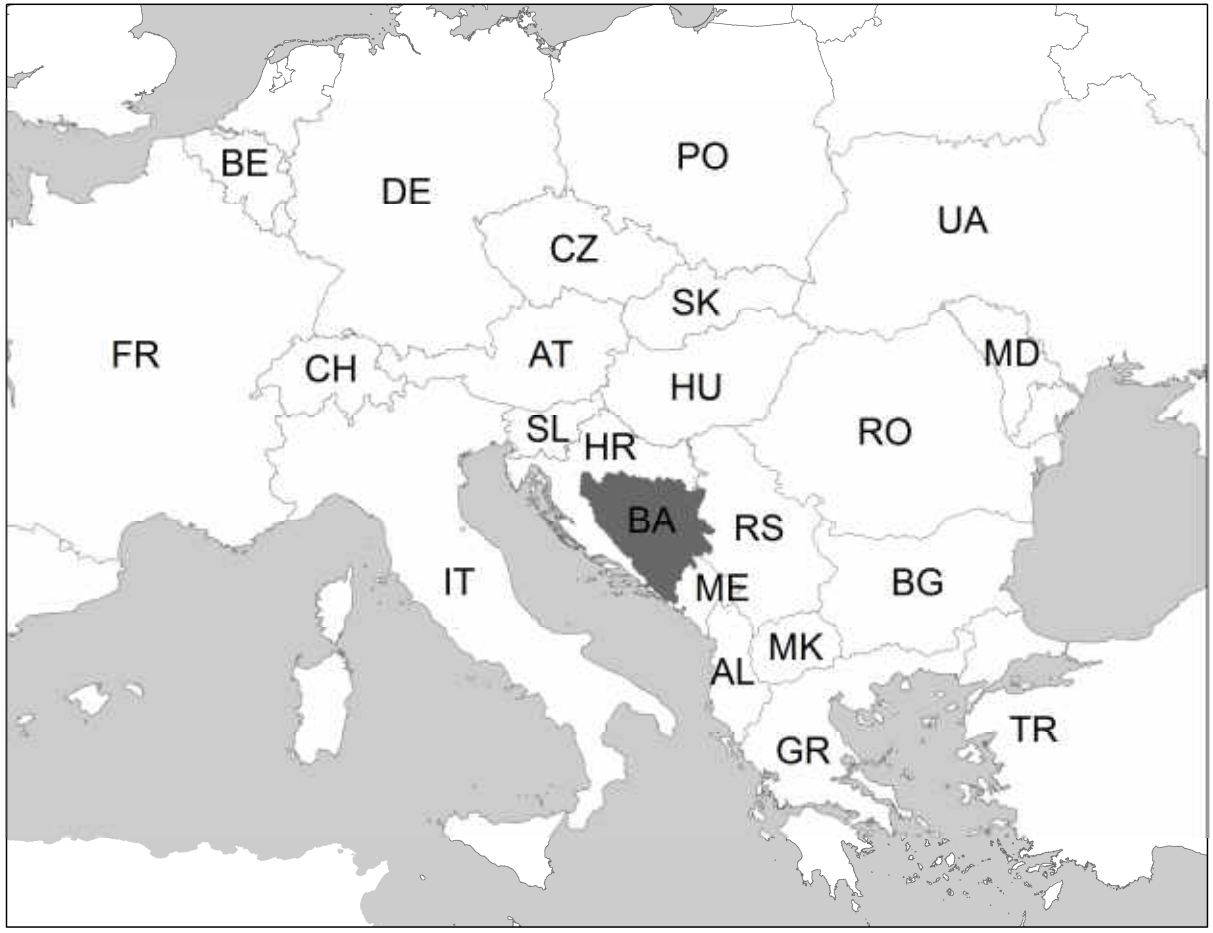
Funded by the Horizon 2020 Framework Programme
of the European Union

A few quick facts about BiH:

rivers, riparian vegetation, nature protection...



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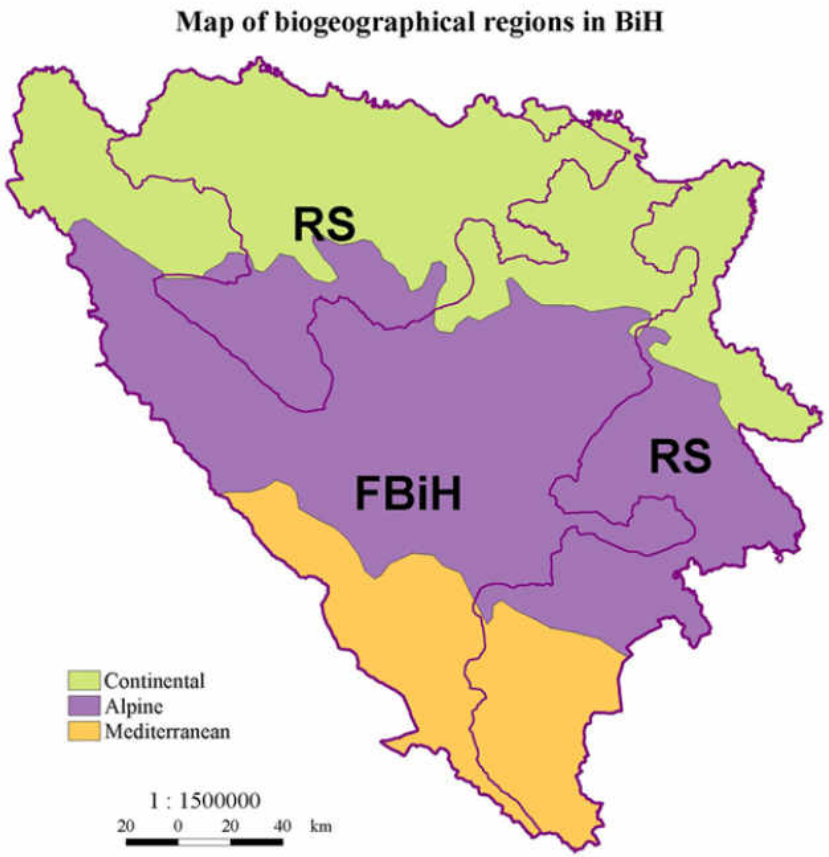

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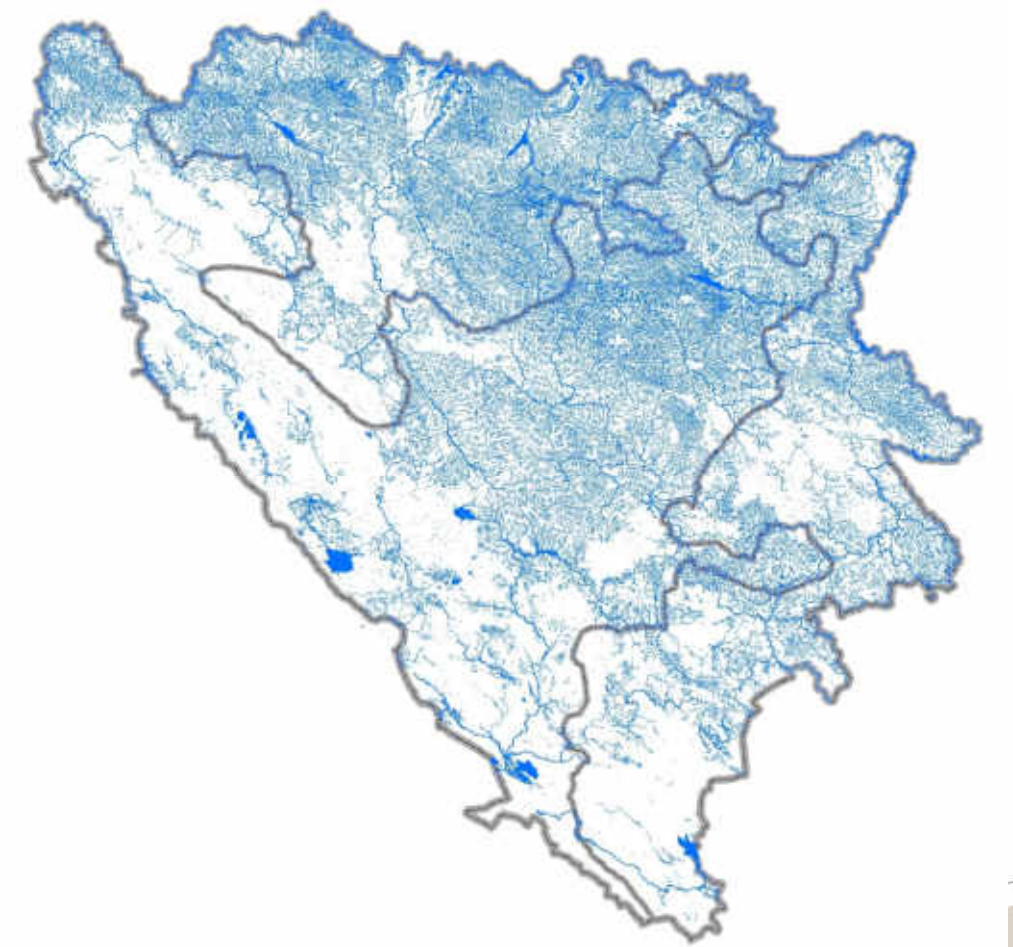

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A few quick facts about BiH:

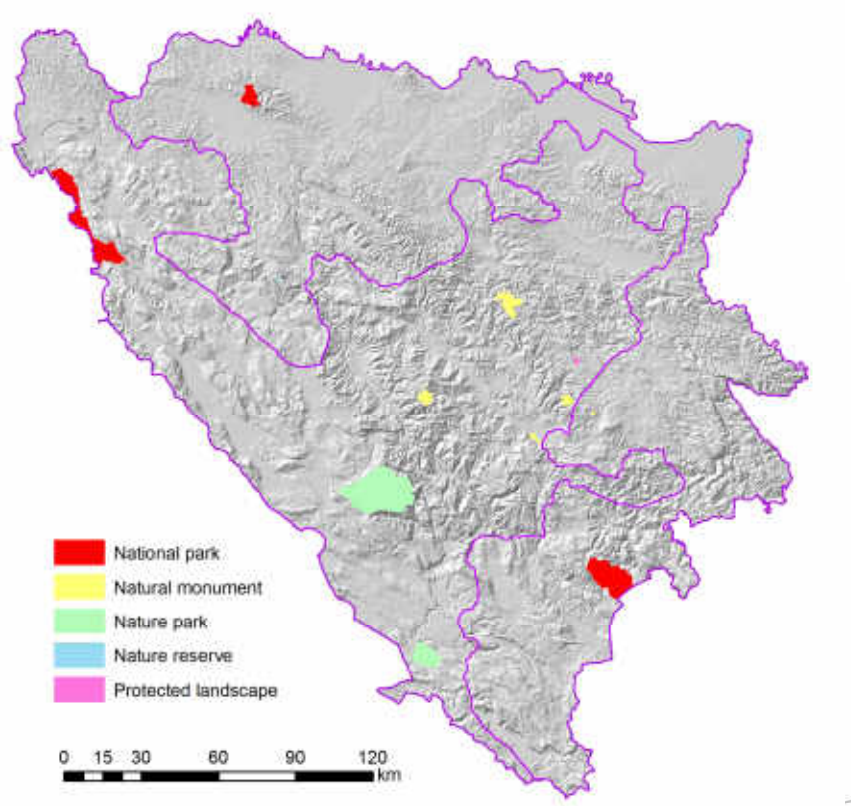
rivers, riparian vegetation, nature protection...

- Lots of rivers = lots of riparian vegetation?
- Only 70 relevés of riparian vegetation in B&H in some kind of publications, mainly thesis
- About 150 more relevés made but not published, mainly not digitized yet

A few quick facts about BiH:

rivers, riparian vegetation, nature protection...

- only about 2% of B&H teritory protected



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A few quick facts about BiH:

rivers, riparian vegetation, nature protection...

- Around 300 „mini“ hydropower plants planned and/or built in BiH
- 244 rivers
- Also two rivers in Sutjeska NP: River Sutjeska and Hrčavka

A few quick facts about BiH:

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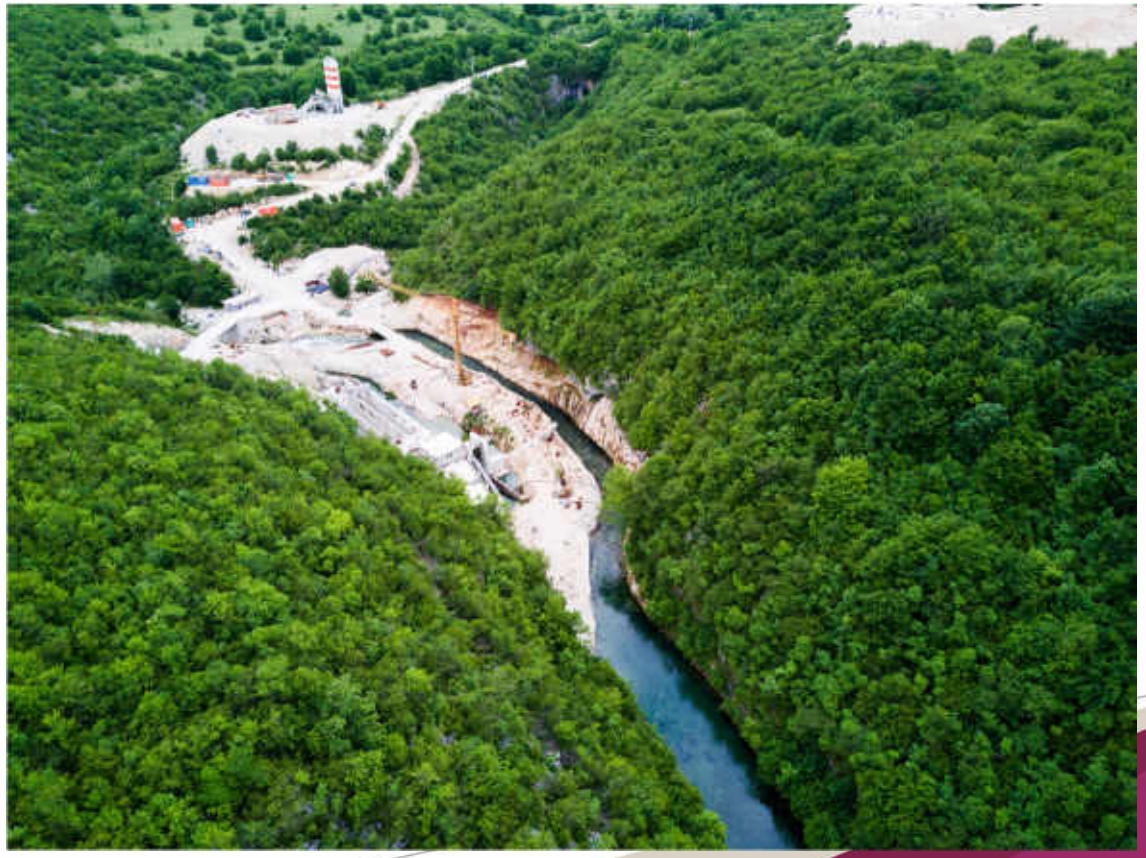
- Around 300 „mini“ hydropower plants planned and/or built in BiH on 244 rivers



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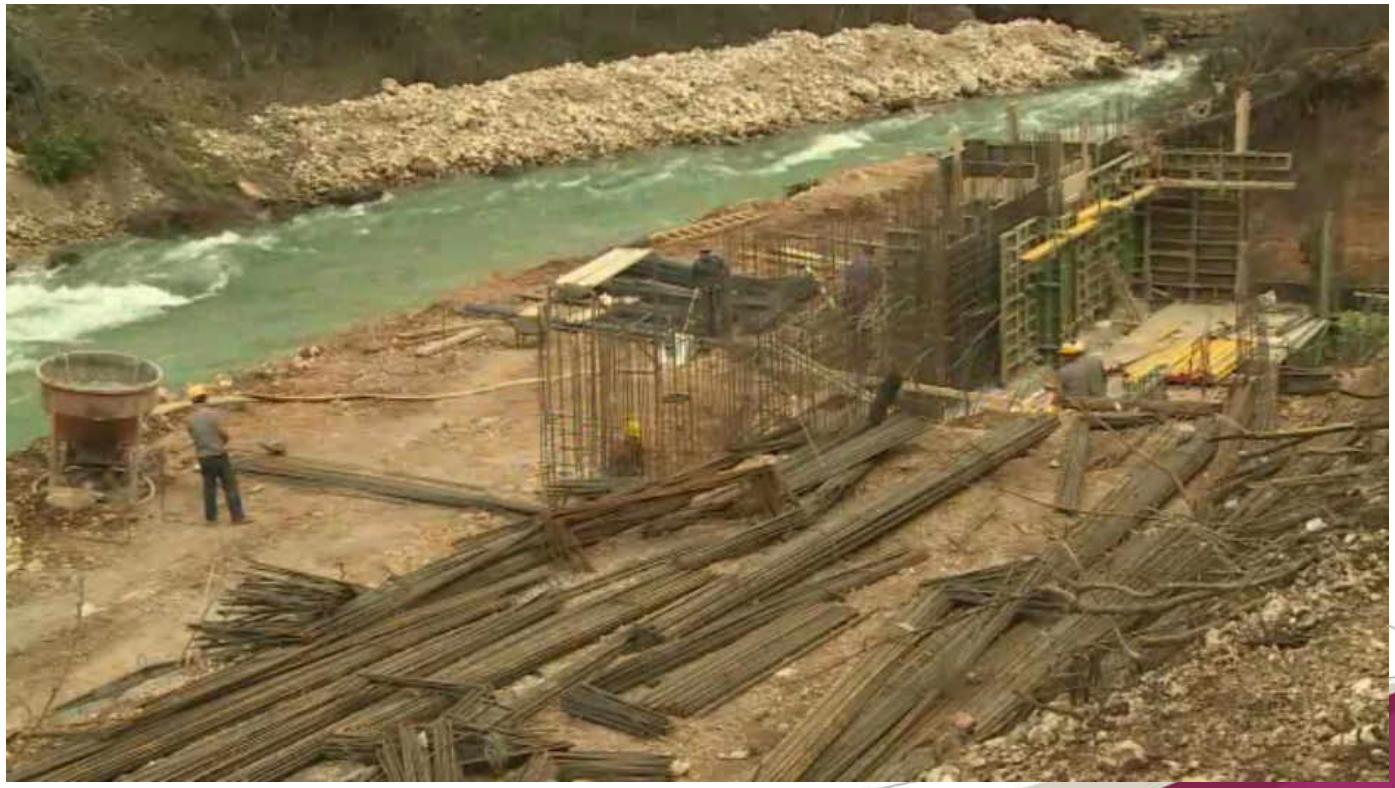

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- Also two rivers in Sutjeska NP
- Sutjeska

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- Hrčavka River

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- Hrčavka River

A few quick facts about BiH:

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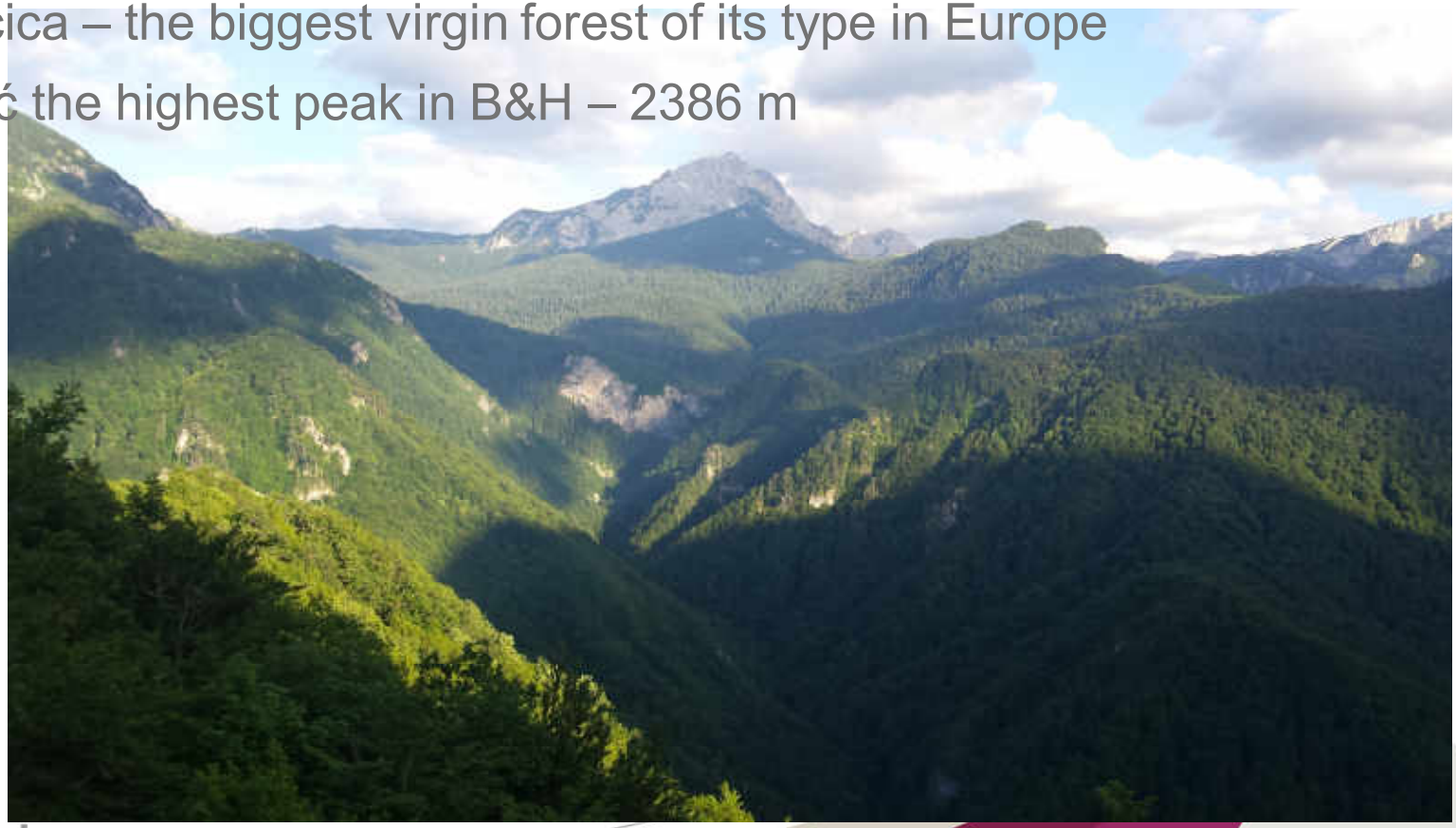
- NP Sutjeska – The first National Park in B&H
- Perućica – the biggest virgin forest of its type in Europe
- Maglić the highest peak in B&H – 2386 m



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- NP Sutjeska - Historical value

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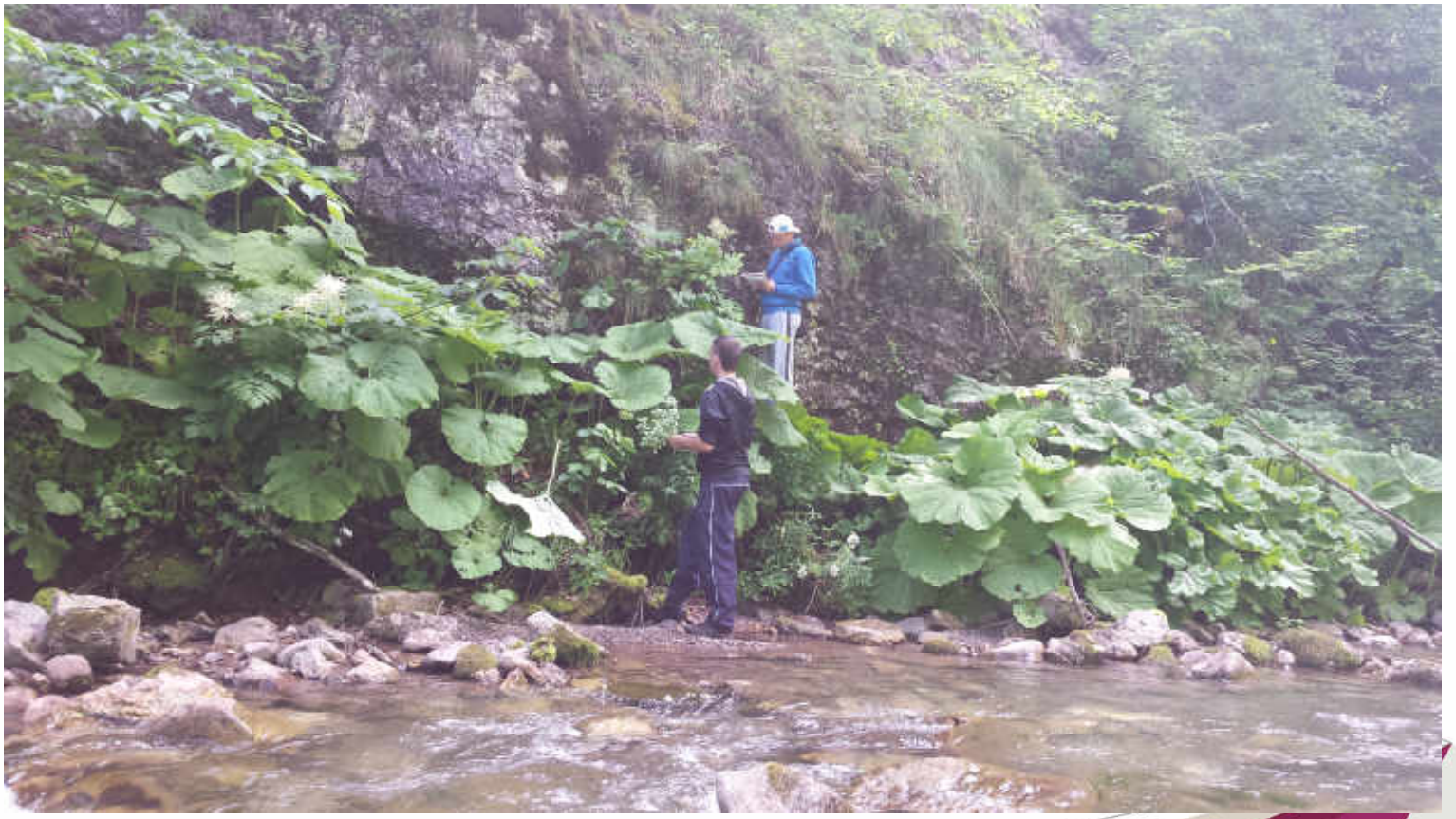

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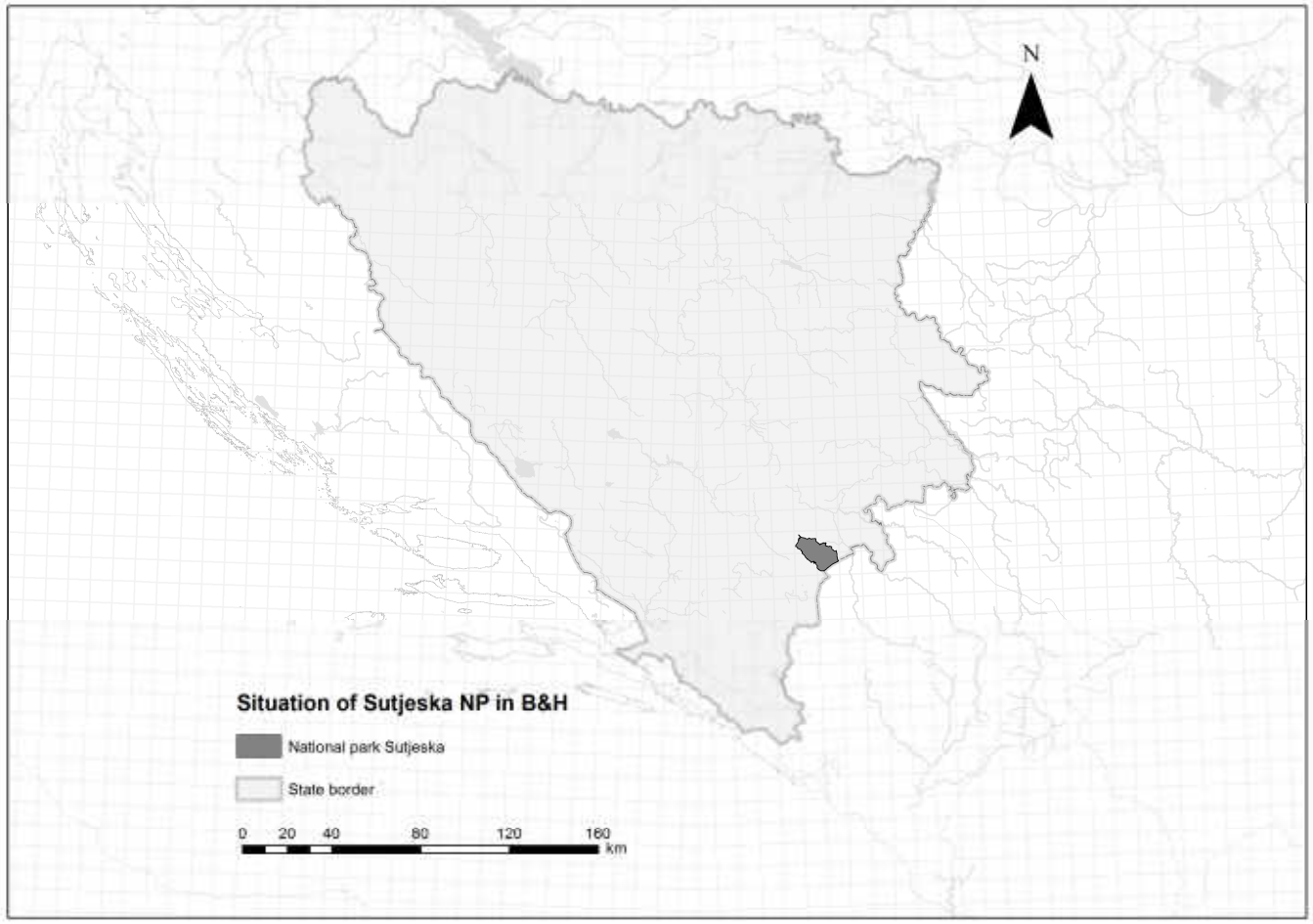
Object of research



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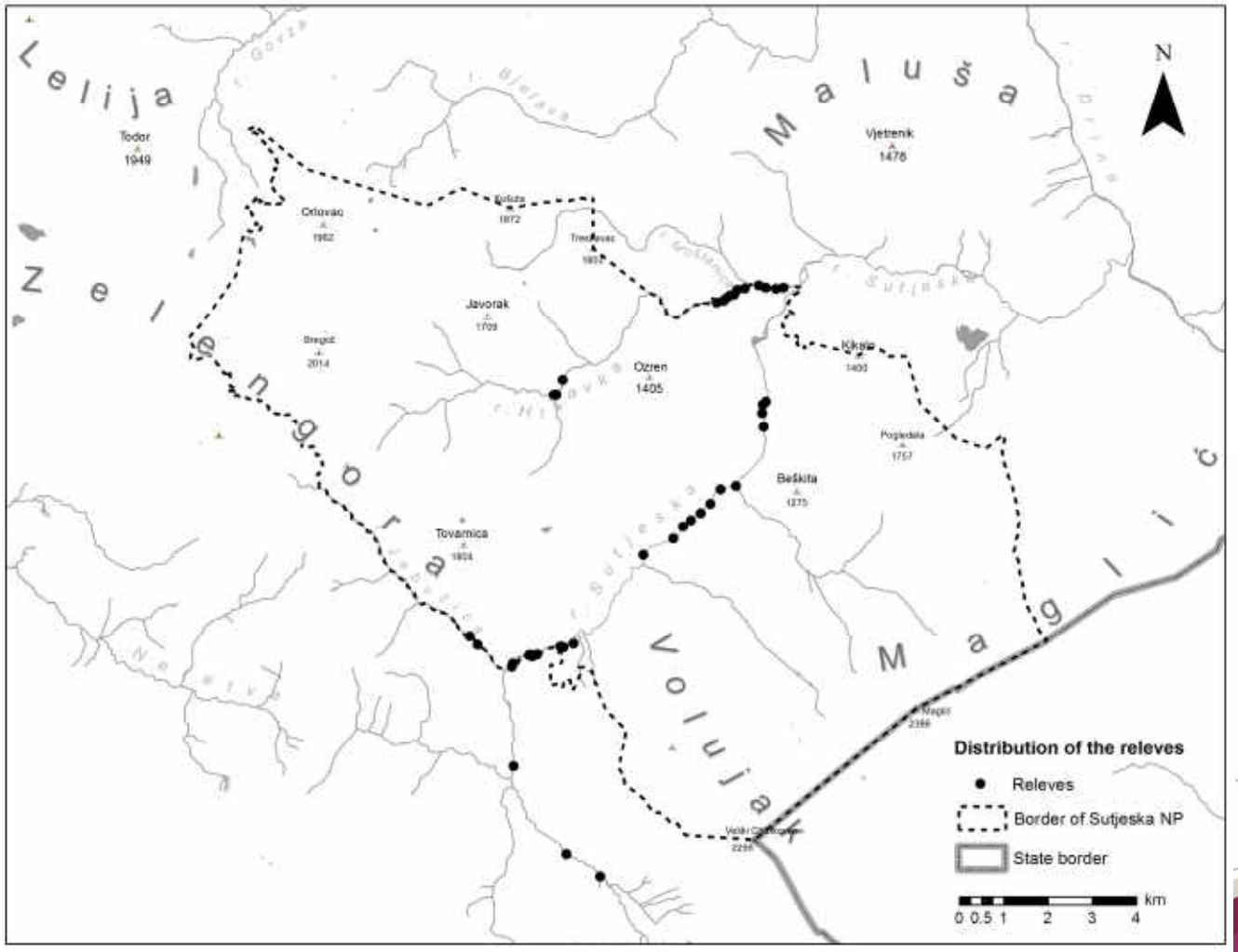
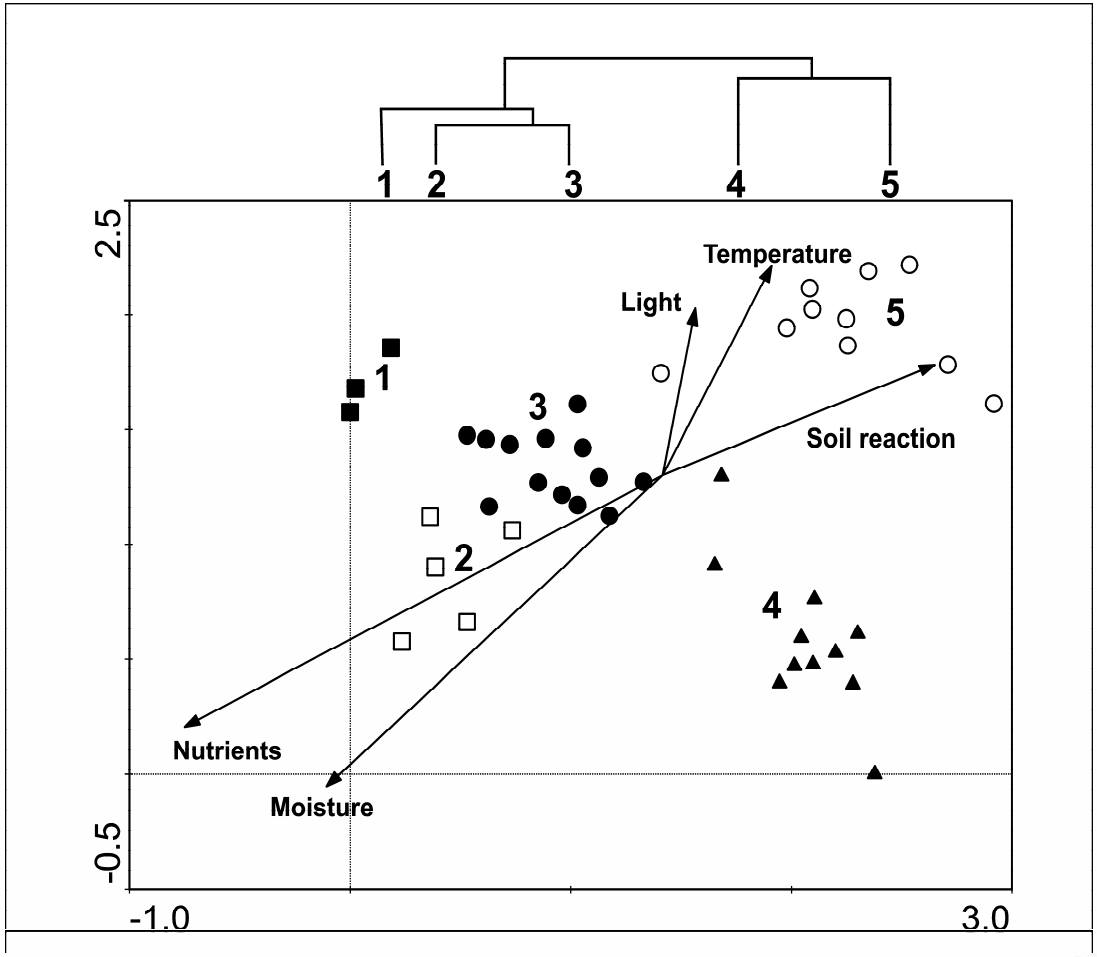


Method

- Central European phytosociological method
- Relevés were made only in typical stands with closed canopy
- A total of 42 relevés was compiled in the Turboveg database
- exported to JUICE for further analysis
- Modified TWINSPAN algorithm
- We subjectively accepted the classification level of five clusters as being most ecologically interpretable
- Only species with frequency above 50% in particular cluster were considered diagnostic if they fulfill additional criterion that the difference in species frequency between the particular cluster and other clusters is more than 40%
- Unweighted average EIVs were plotted onto DCA (detrended correspondence analysis) ordination diagram

Results:
Classification dendrogram and DCA ordination plot



1: willow scrub of Salix eleagnos and S. caprea on fertile fine grained deposits;
2: forests of Alnus glutinosa and Salix alba also on finer deposits;
3: narrow strips of Alnus glutinosa along the low banks of smaller streams;
4: narrow strips of Alnus glutinosa along the steep banks of wider streams;
5: thermo-mesophilous scrub of Salix eleagnos on gravel beds.

Results:

- **Group 1**: willow scrub of Salix eleagnos and S. caprea on fertile fine grained deposits

Dominant and diagnostic species:
Salix elaeagnos, Petasites hybridus, Urtica dioica, Lunaria rediviva, Salix caprea, Galium aparine, Carduus personata, Telekia speciosa

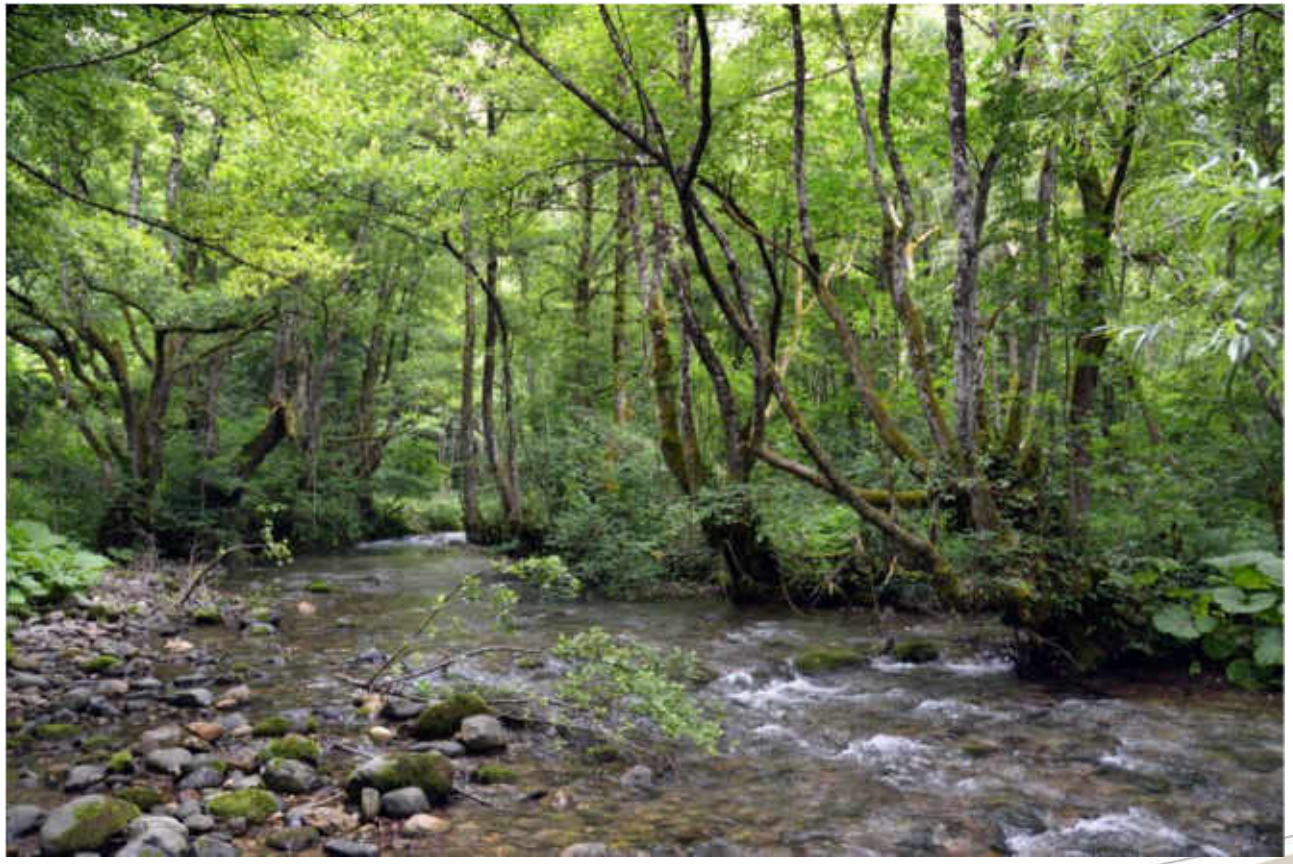
Results:

- **Group 2**: forests of Alnus glutinosa and Salix alba also on finer deposits

Dominant and diagnostic species:
Alnus glutinosa, Salix alba, S. fragilis, Petasites hybridus, Ranunculus repens, Lysimachia nummularia, Carex remota, Solanum dulcamara, Scutellaria altissima, Geum urbanum, Circaea lutetiana, Carex sylvatica, Primula vulgaris

Results:

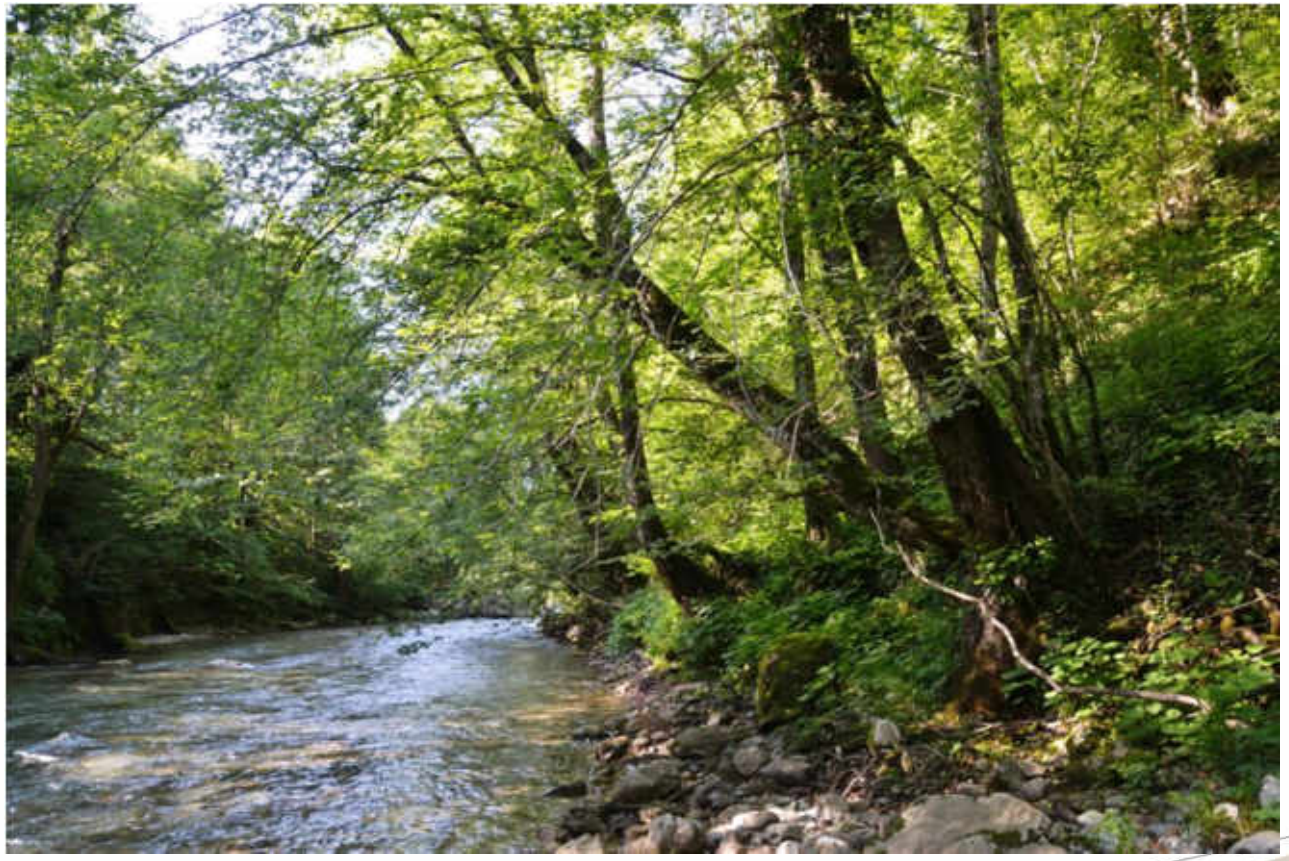
- **Group 3**: narrow strips of Alnus glutinosa along the low banks of smaller streams



Dominant and diagnostic species: Alnus glutinosa, Aegopodium podagraria, Peucedanum aegopodioides, Lamium galeobdolon agg., Geranium robertianum, Carex sylvaticaGeranium phaeum, Asperula taurina, Helleborus odorus, Symphytum tuberosum, Cardamine bulbifera, Glechoma hirsuta, Euonymus europaeus

Results:

- **Group 4**: narrow strips of Alnus glutinosa along the steep banks of wider streams



Dominant and diagnostic species: Alnus glutinosa and Fagus sylvatica, Salvia glutinosa, Dactylorhiza fuchsii, Clematis vitalba, Hedera helix, Elymus caninus, Veronica urticifolia, Petasites kablikianus, Sesleria autumnalis, Angelica sylvestris, Peucedanum aegopodioides, Aegopodium podagraria, Lactuca muralis, **Adenophora liliifolia** and Lactuca pancicii

Results:

- **Group 5**: thermo-mesophilous scrub of Salix eleagnos on gravel beds

Dominant and diagnostic species:
Salix elaeagnos, Ostrya carpinifolia, Clinopodium vulgare, Fragaria vesca, Calamagrostis varia, Carex flacca, Carex digitata, Tamus communis, Hieracium sabaudum and Melampyrum pratense

Results:

Syntaxonomical scheme:

- 1: willow scrub of Salix eleagnos and S. caprea on fertile fine grained deposits – probably Salicion eleagno-daphnoidis, very similar to already known Salicetum eleagno-purpureae Sillinger 1933 subass. petasitetosum hybridi
- 2: forests of Alnus glutinosa and Salix alba also on finer deposits – somewhere in between Salicion albae and Alnion incanae
- 3: narrow strips of Alnus glutinosa along the low banks of smaller streams – probably Alnion incanae, very similar to Stellario nemorum-Alnetum glutinosae
- 4: narrow strips of Alnus glutinosa along the steep banks of wider streams – probably new association in Ostryo-Tilion
- 5: thermo-mesophilous scrub of Salix eleagnos on gravel beds – almost certainly new association – alliance? - We don‘t know.

Results:

Other brain teasers:

- No *Alnus incana*
- *Alnus glutinosa* looks funny?!

...

and then...

Results:

Other brain teasers:

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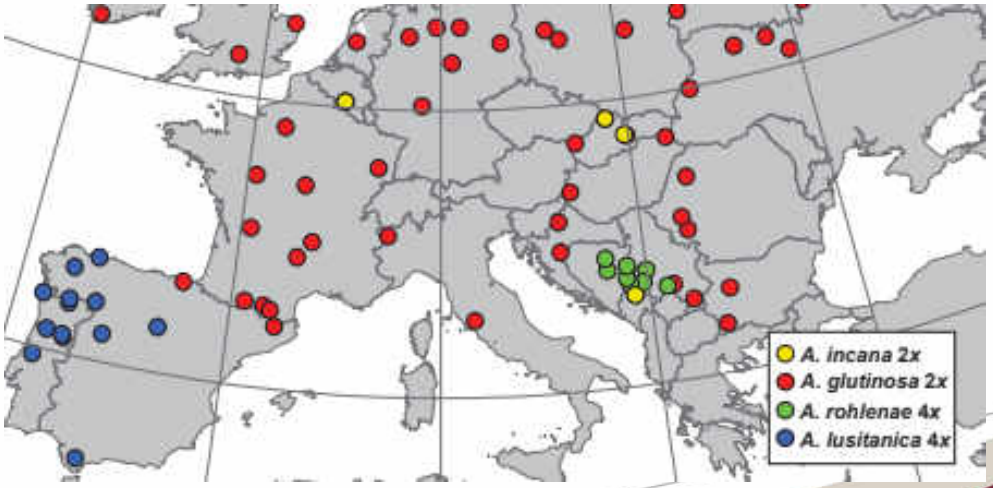
Two new polyploid species closely related to *Alnus glutinosa* in Europe and North Africa – An analysis based on morphometry, karyology, flow cytometry and microsatellites

Petr Vít,[1,2] Jan Douda,[1,2] Karol Krak,[1,2] Alena Havrdová[1,2] & Bohumil Mandák[1,2]



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