Historical coppice woodlands in SW Slovakia: an analysis for the forest management and nature conservation

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Wood cutting and utilization,

Sachsenspiegel, 13. cent.

Middle Age

Anglo-Saxon Calendar, Working in vinyards and forests (11. cent.)

Medieval mason, 15. cent. France

Wood cleaving, „Virich Holzhacker“, Mandelschen Hausbuch (ca. (1414)

St. Gregorii Magni Moralia in Job, Dijon (12. cent.)

(Hudáček 2011)

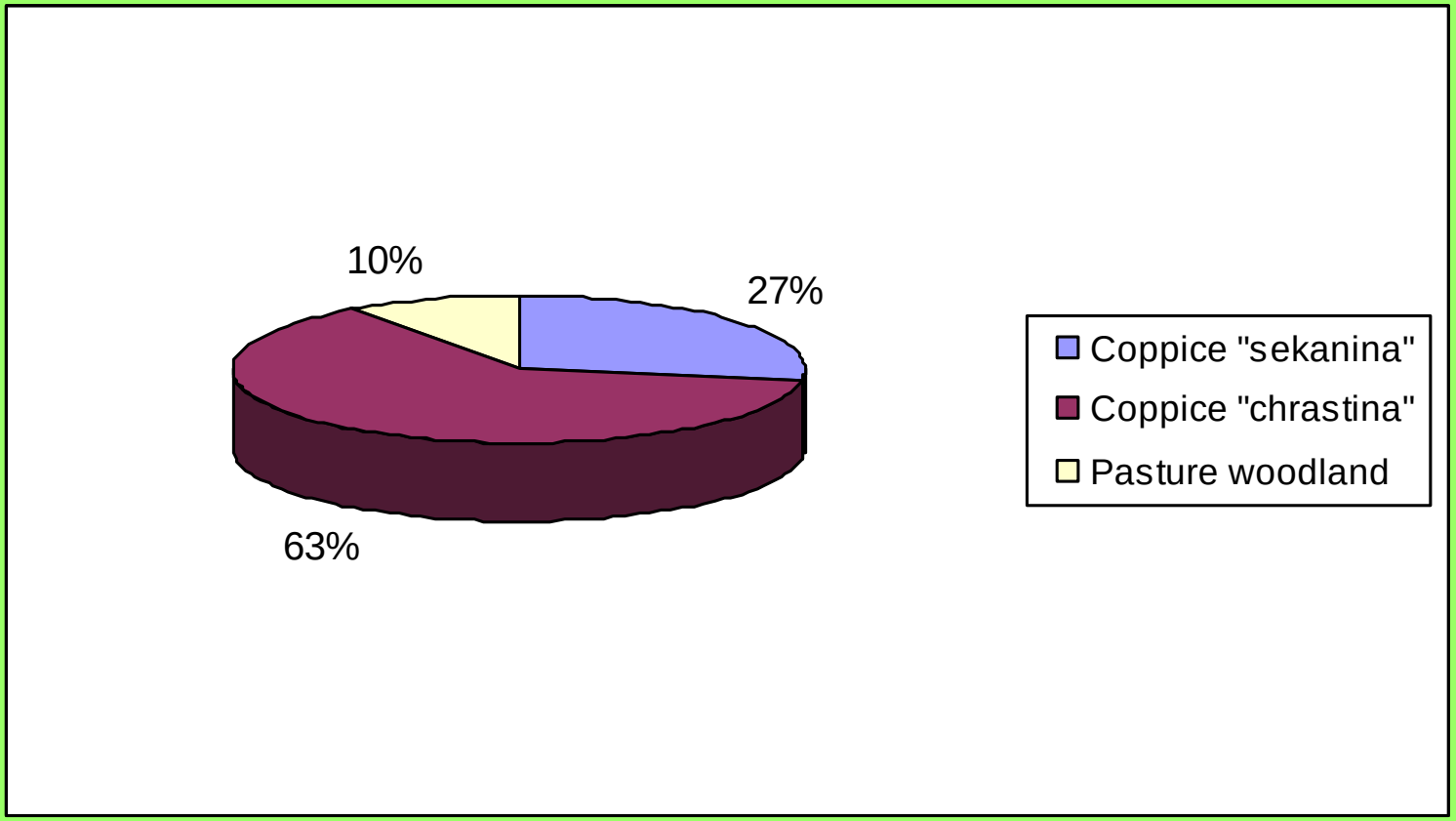
- The driving forces of various forest management strategies were based on real society demands in the particular era. Experience showed, that there was a larger share of heliophilous species in traditional forests (they were thinned) and they were rather poor in nutrients (regular biomass removal – wood, litter, branches etc., lower eutrophication of the environment).
- In SW Slovakia, planting of oaks from seed is mentioned in a written document from Kostolné Kračany from 1262 ("*per manus hominum silva nemorata de glandibus seminando fuerit procreata*"). This record is one of the oldest in Europe.

We divided coppice into two or three types with a question about their relatedness or casual identity.

1.The first category was a coppice forest in general ("*erestvín/eresztvény*" or "*sekanina*") and forests called "*chrastina*" or "*haraszt*" probably consisted oak stands (mainly oak and oak-hornbeam forests) with rather short harvesting cycle of firewood or "*letnina*" (cut branches for winter feeding of livestock).

2.Pasture woodland (with older tall trees) is often identified as a forbidden forest (regulated timber harvesting, limited collection of firewood and seasonal pannage; despite that, coppice forests are also occasionally called „forbidden“).

Forest management



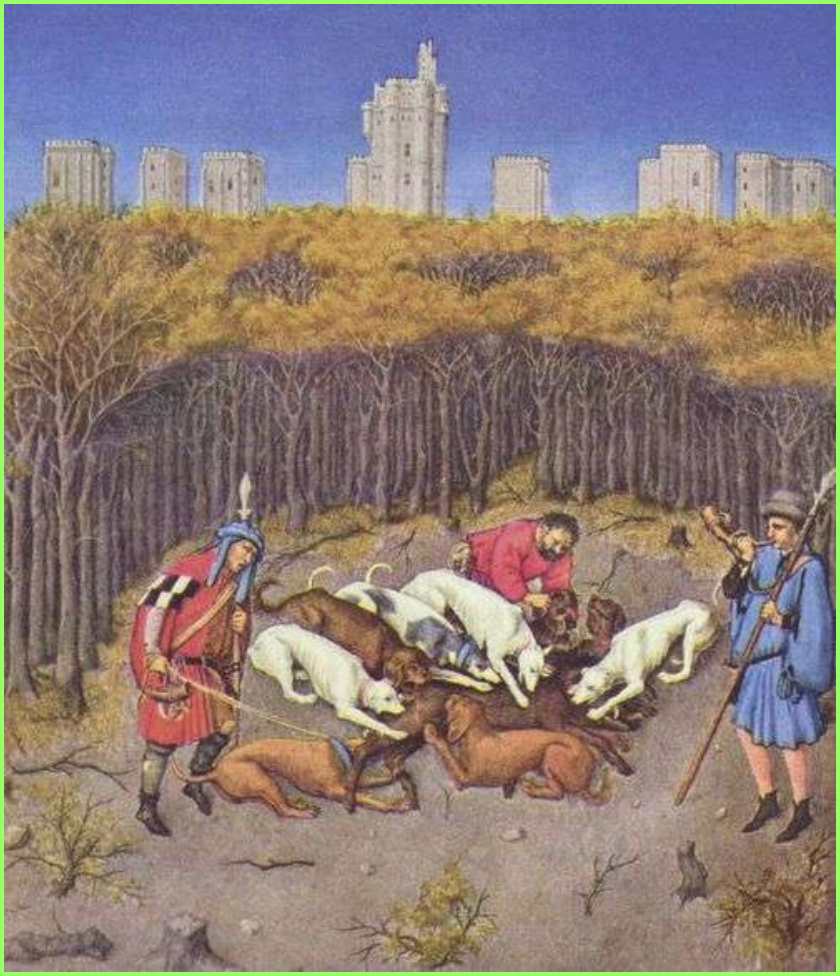
The shrubby nature of such vegetation is also indicated in the dictionary entry from 1763 ("*virgultum: chrást, chrástina, hússč, husté mjsto prútowe*"). It is the most numerous category of all the forest names, being the name used already in the Middle Ages.

We cannot agree with Krippel (1986) that "*chrastina*" is a "destroyed deciduous forest".

Nitra 18. cent. (?)

Pohranice 19. cent.

Limburg brothers (Pol, Hennequin and Herman von): Très Riches Heures du Duc de Berry (1412-1416)

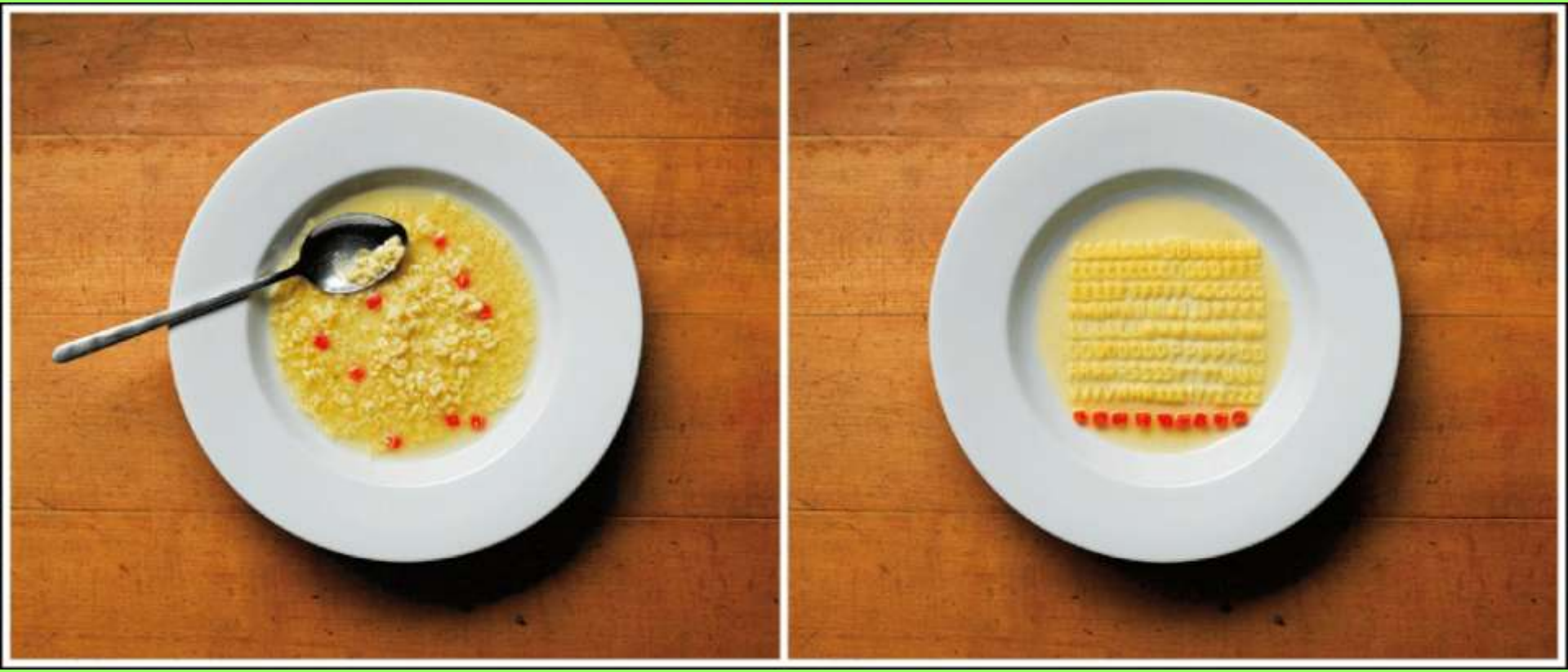


EU

before the EU regulations

after the EU regulations

EU



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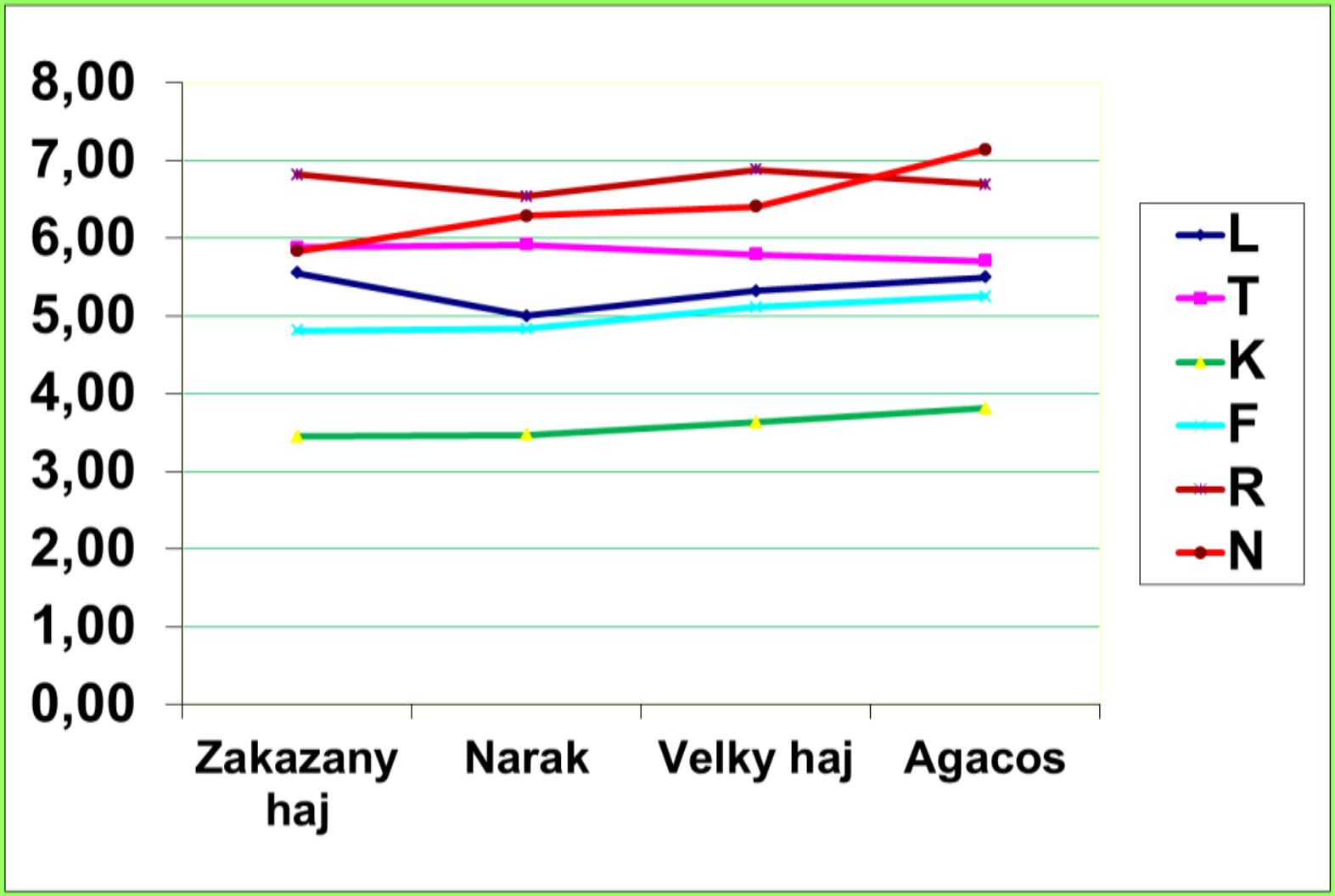


Extensive use

Intensive use

Nature conservation

Coppice forests are considered as an important part of the landscape and suitable for protection including the declaration of protected areas or NATURA 2000 sites within them. In terms of nature conservation, it remains a challenge, whether to preserve forests with less intensive management and risk the decline of oak and the heliophilous species of the herbaceous layer, or to manage the forests more intensively, even in protected areas, so that forests would be lighter and would maintain "their" rare (and protected) species. Restoring oak stands is harder than restoring beech forests, due to, among other things, their poorer coppicing ability, the irregular periodicity of acorn production and the different layer structure of the woody storey.

How many …?

Valuable habitats under coppice management

- Pannonic woods with *Quercus petraea* and *Carpinus betulus* 91G0*,
- Pannonian woods with *Quercus pubescens* 91H0*,
- Euro-Siberian steppe woods with *Quercus spp.* 91I0*,
- Pannonian-Balkanic turkey oak-sessile oak forests 91M0,
- *Galio-Carpinetum* oak-hornbeam forests 9170,
- ***Tilio-Acerion* forests on slopes, screes and ravin 9180***,
- *Luzulo-Fagetum* beech forests 9110,
- *Asperulo-Fagetum* beech forests 9130,
- Medio-European subalpine beech woods with *Acer* and *Rumex arifolius* 9140,
- Medio-European limestone beech forests (*Cephalanthero-Fagion*) 9150.

NC status

- Within all 10 habitat categories: favourable (B), unfavourable (C, D) and No habitat status (E) is indicated but to 91G0*, 91I0*, 91M0, 9170, 91H0* also favourable (A) status is added.
- SMP promote conversion to high forests (except of 9180* where coppice is acceptable or slow conversion).

Species maintained by coppice?

In the class ***Quercetea pubescentis*** (Thermophilous oak forests):

Dictamnus albus, *Primula veris*, *Vincetoxicum hirundinaria*, *Betonica officinalis*, *Bupleurum falcatum*, *Lathyrus pannonicus*, *Campanula bononiensis*, *Teucrium chamaedrys*, *Adonis vernalis*, *Aster amellus*, *Geranium sanguineum*, *Thymus glabrescens etc., etc.*

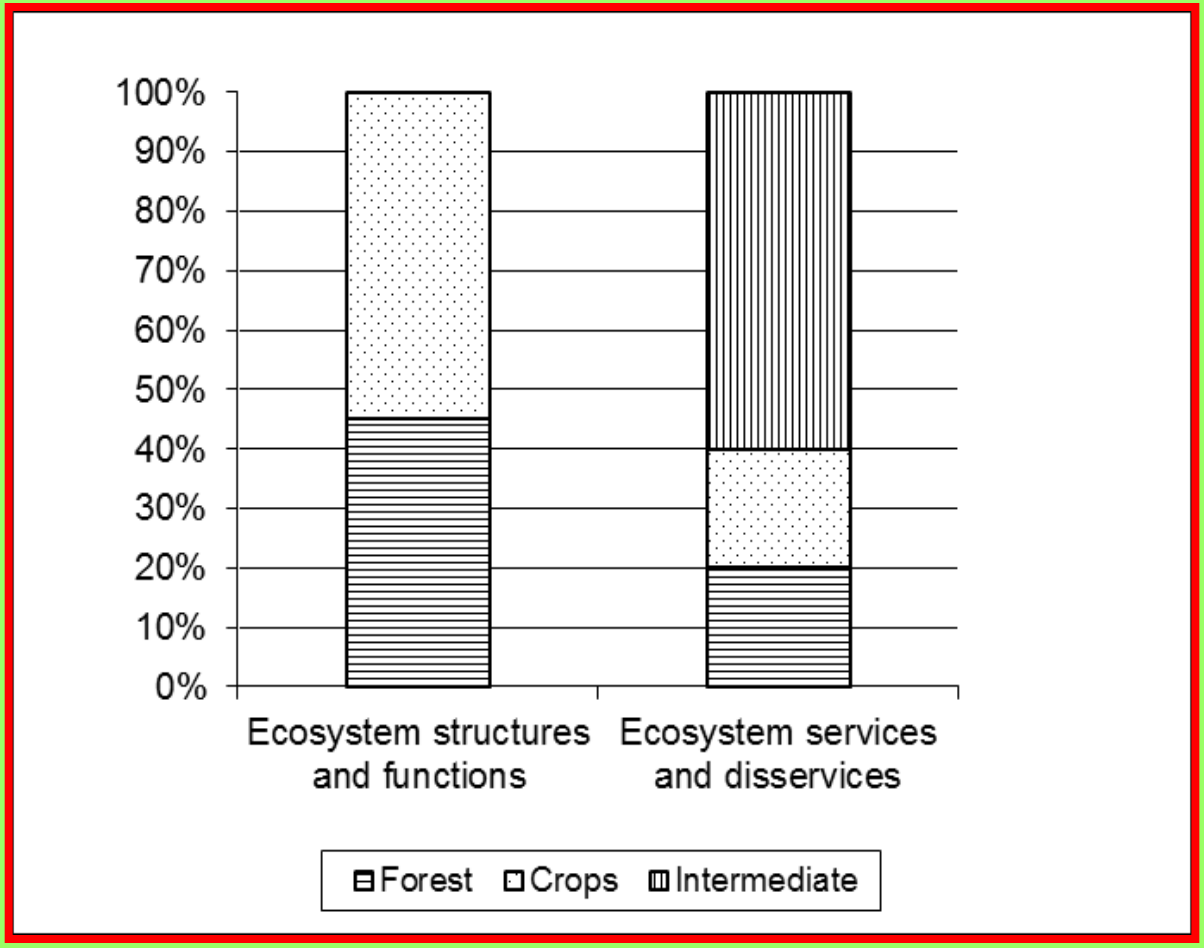
Species conservation

- Pannonic woods with *Quercus petraea* and *Carpinus betulus:* *Cerambyx cerdo*
- Pannonian woods with *Quercus pubescens*: *Himantoglossum adriaticum, Cerambyx cerdo, Rhinolophus euryale*
- Euro-Siberian steppe woods with *Quercus spp.*: *Cerambyx cerdo, Rhinolophus euryale*
- Pannonian-Balkanic turkey oak-sessile oak forests: *Myotis bechsteinii*
- *Luzulo-Fagetum* beech forests: *Rosalia alpina, Barbastella barbastellus*
- *Asperulo-Fagetum* beech forests: *Cyclamen fatrense, Rosalia alpina, Barbastella barbastellus, Ursus arctos, Canis lupus*
- Medio-European subalpine beech woods with *Acer* and *Rumex arifolius*: *Pholidoptera transsylvanica, Lynx lynx*
- Medio-European limestone beech forests (*Cephalanthero-Fagion*): *Cypripedium calceolus, Cerambyx cerdo*

The *Robinia* story

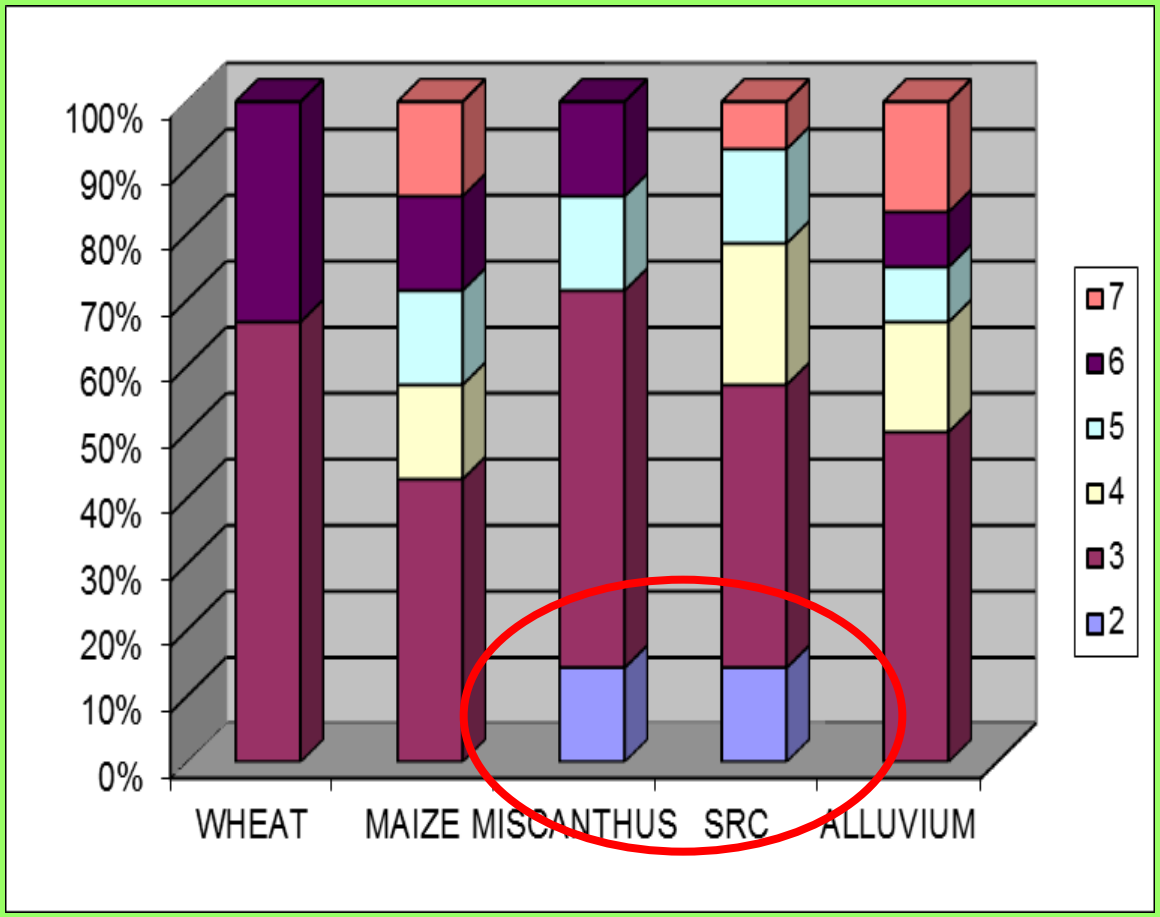
- Until 2002: no list of invasive list
- 2003-2010: non-invasive
- From 2011: invasive
- Now: non-invasive

- In the future???



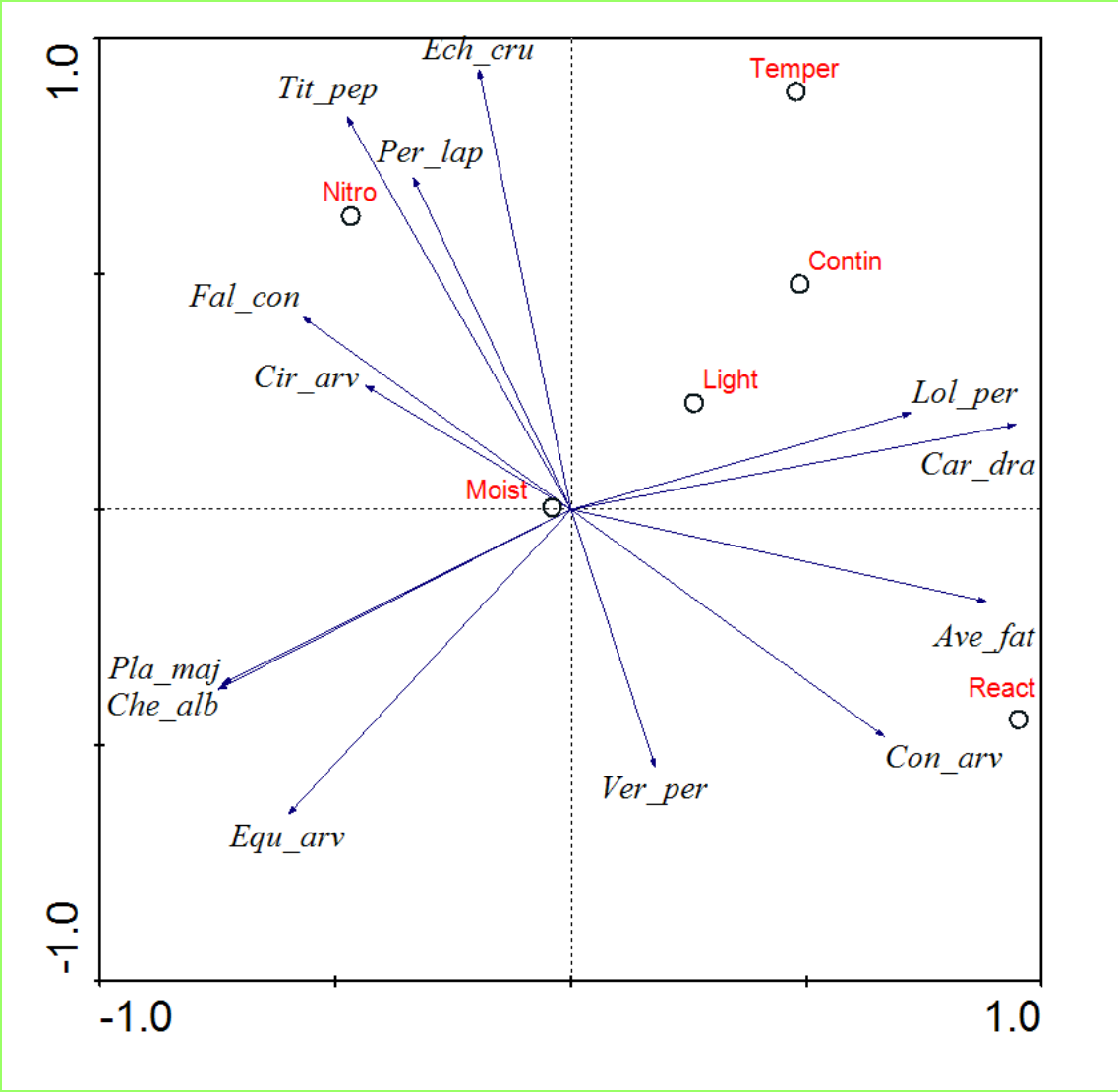
Comparison of ecosystem services and disservices of forests, field crops and SRC (+++ very positive effect, ++ significantly positive effect, + positive effect, 0 neutral, - negative effect, -- significantly negative effect, --- very negative effect).

Share of Ellenberg`s continentality values for weeds in stands of crops, energy plants and alluvial plant community. Continentality value has a predominant distribution range from the Atlantic coast (1) to the inland parts of Eurasia (9).



Based on the results, it can be concluded that the stands of energy crops in the agricultural landscape mosaic foster the expansion of Atlantic species. However, these findings are preliminary and require a further study.

Biplot of principal components analysis (PCA) of weeds and their ecological condition preferences in energy plant stands (developed by Canoco 4.5 and CanoDraw 4).



Conclusion

In conclusion, it can be stated that grazing in forests in the past, selective logging, complete removal of shrubs, or the opposite, dense overgrowth of bushes left traces in oak forests, Turkey oak forests and oak-hornbeam forests.

We guess, that the protection of certain forests (and related biodiversity) can be ensured in particular by their traditional use.


Thank you