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### **Czech Trip Impressions**

The following is a very short summary based on my field notes on our Czech Trip. Text in broad letters is from our trip program. There is some confusion about dates and localisation of some of the places we visited (when localities are not mentioned in the program). I apologise for this and also for any misunderstandings. The text is not read by Moonika or Per Øystein, who might have important extra contributions....

**Saturday 30<sup>th</sup> May:**

Královéhradecko Region (East Bohemia)

#### **Na Plachtě**

**Former military training ground at the outskirts of Hradec Králové, where specific management is implied; this locality is included in the project, however a protection plan will not be processed as this locality is a state - protected area.**

This locality has many different nature types; meadow dominated by *Molinia*;, *Calluna*-dominated drier areas, many ponds, exposed sand and silt areas. The military activity with tanks and other heavy equipment kept ponds, mud patches and sandy slopes open, and gave room to a very special biodiversity. Later the area has been overgrown with woody vegetation. The area supports many threatened species, among them plants (f.eks *Raolina*) mosses and insects. Also one site with old road debris is a constructed habitat for *Triops* collected from a road construction site.

Management is done with volunteers driving tanks in order to keep mud areas and sandy slopes open. There is also been cleared a lot of woods, a work still going on. Meadows are cut once a year. There is no Grazing activity.

This is a very interesting site, and the work being done here was very impressive! Especially I found the reconstruction of old meadow (restoration project) interesting. It should absolutely result in important knowledge about how to do. Normally, we advise this type of restoration to be done gradually – the trees to be taken down over at least six years in order to avoid the former shaded forest ground cover to collapse (giving growth to fast growing pioneers instead of nature meadow plants). One of the problems connected to fast deforestation is the huge supply of soluble plant nutrition (N and P) freed from roots and stems in the ground, which will give opportunity for unfavorable plants.

The site had many invasive foreign species. One of them, *Robinia*, was attempted taken out by partly girdling. I would be very interested in this way of dealing with a famous problem plant (which we until now do not have had to deal with in Norway). Literature suggest the use of either chemical treatment or heavy goat grazing for this species, since cutting or girdling will result in formation of root suckers, the latter also induces extra seed production.

The herb/graminoid invasives seemed not to get as much attention as the lignoses, but controlling this part would may be involve intensive grazing regimes.

### Ještěří ráj site

**Dry hillslopes maintained by goats' grazing + adjacent fallow land; a protection plan is being processed (GPS: 50°23'11.334"N 15°55'7.692"E).**

This was partly forested natural grassland, partly restored. On top of the slope was fallow land. In the central parts the (some patches) very dry grassland is very species rich with nice vegetation and several red list species.

Management is done by sheep and goat grazing. Grazing is done by moving the animals from patch to patch. Some of the area is mowed, and some is done in cooperation with the power line authorities (?). Most of the open grassland is reclaimed forest.

It is very admirable that this site is managed with grazing animals (we understood that it was difficult to get hold of animals and to sustain a good herd! If possible we would advise a harder grazing regime with more animals and grazing down to a shorter sword. Steppe elements will be very vulnerable for shadow, and may benefit also from animal trampling, as to expose sand and stones.

If I were to restore the site vegetation, I would try to take away all trees from the outskirts of the dry slope, in order to encourage dry grassland species, which suffer under partial shade from trees. If trees are to be kept in some parts of the area, I would suggest to clear away under storey and lower branches, and keep only loosely set tree clusters, with tree distance so far that the crowns are not in contact. Trees were kept this way in old farming systems on dry land, – as they give some shade to inhibit transpiration, but also let some sunlight down on the ground for the benefit of groundcover grasses and herbs. In the ancient farming systems we used until the tractor age, farmers also harvested twigs with leaves or sprouts from the trees.

As mentioned about site 1. (See above), gradually exposal is wise. For deforestation I suggest that the goats are left to do the job with the broadleaved trees. Goats are primarily leaf and cambium eaters while sheep are happy with foraging on grass. I have very good experience with landscape restoration (grassland restored from forest) done with the help of goats. Goats have a very strong herd culture, and sometimes it is necessary to teach the herd (or the leading goat/s) girdling by opening some trunks for them in spring, particularly if the animals are recruited from stable living herds or the animals came to the site as kids with little nature experience.

We discussed how to mow; and I still recommend the scythe or a cutting device instead of a thread mower. The latter will shred the hay and produce a lot of small litter, which release nutrients (soluble N and P), and also tend to build up a organic thatch which increases the water storage of the soil, which can give habitats for a lot of unfavourable plants belonging to arable land (pioneers and “weeds”).

**Sunday 31th May:**

### “Kaňk” site

**Area close to Kutná Hora (GPS: 49°56'54.4" N, 15°16'5.62" E) (1 hr 15 min). Steppe slopes + paleontologically interesting quarry; this site was not included the Project in the end due to disagreements with the former city leaders. The Reserve was established as one of the first in CR.**

The area has been without any management for 25 years and management started 5 years ago. A mixed management regime with grazing, mowing and “no impact” is chosen. Areas close to conducts are not to be grazed in order to avoid conflict. Grazing is done with sheep and temporary fencing (?).

Some of the area is an 80 year old cherry grove, which is to be kept up and managed with old methods (partly mown, no pesticides or watering). Other parts consist of steppe vegetation with *Stipa bromoides* as signal species. The clearing of trees from the former steppe areas is a important part of management. Some of the seed dispersed cherry trees are to be kept as habitat for a special beetle species. A signal of good work is the population of *Stachys betonica* which has grown from 30 ex to more than 300 ex after implementation of management.

A very impressive site, fantastic species richness! The people of historic Kutná Hora have gained a real pearl for recreation!

It is very easy to get impatient at this restoration sites – all the trees and shrubs made us nervous, but actually this site is just right in the process of gradual clearing? The site is huge enough to keep up intensely used grassland (meadow and grazing areas) as well as brims which give way for other species. In open steppe slopes I would encourage some sites with harder grazing. When the early history of the site is not known, I would assume that some dry parts have been grazed intensely, and more humid patches have been used for either arable land or for mowing, a management model I would suggest to copy at least in smaller areas (such management must have a history of many thousand years).

#### **“Cihelna Chmeliště” site**

**Former brickyard, where spontaneous succession occurs; activities: protect the site from becoming a landfill + a protection plan is being processed. The visit of this site was a part of a field trip organized for donors who supported the public fundraiser for purchasing endangered sites.**

The clay supports water holes and ponds, which partly have been reopened with baggers in order to support habitats for amphibians and water insects. The brick company had law orders to close and revegetate the brickyard, this being an important obstacle in protecting the site.

Per Øystein, our reptile specialist was impressed by the biodiversity. For some of the ponds he found that one side of the water should be kept open and sunlit in consideration of some of the animals. Me, the vegetation freak, found that the plants in the field zone were treated unfairly! Most of the effort was obviously put in tree clearings, and much of the area showed signs of eutrophication. What about mowing it in order to recreate wet meadow and get rid of some *Holcus*, *Aegopodium* and other weedy plants? (Or let in some grazing animals?)

**Monday 1<sup>st</sup> June:**

**“Lom Hády” site** close to Brno

**Abandoned limestone quarries, where a near-natural recultivation was implied, Land trust activities: approaching the public - nature trail, breeding of llamas; protection plan is being processed.**

The quarries were closed early in the 1990ties, when the owners planted 20.000 small trees, of which most died out. Near the visiting centre, the land is now grazed by llamas, the grassland very species rich with abundant small typical grassland plants.

On open former quarry steppe vegetation is established by the “hay method”, where cut material from another site is spread out on bare land. In their experience this method works well only in the first 2-3

years after the quarry was abandoned. Later all the micro habitats will be occupied and it is impossible to influence the species composition. Among others *Calamagrostis epigeios* has been a problem species.

In one site the activities have opened up for artesian water which collects in a pond and gives rise to a little stream, this creating a wetland site on pure chalk!

Another area nearby consist of grassy, south-faced slopes with very many rare herb and grass species. Vegetation is close to *THH02-Geranio sanguinei - Dictamnun albi* (according to Chytrý, M. (ed) 2010 : Vegetation of the Czech Republic. vol1: Grassland and heathland Vegetation), which only persist on very few sites in CR.

What a phenomenal site! We were very concerned that grazing not was implemented on sites outside the visitor centre. We would consider both the newly established steppe and the *Geranium-Dictamni-slopes* as dependent on grazing (or mowing) in order to be sustained. The latter is connected to *Quercus* forest, and it is not mentioned to be dependant of management by Chytrý (2010) (maybe in the Czech text, I only can understand the English résumé). But recent research has showed that *Quercus* forest itself is grazing dependent (see Franz Vera or Oliver Rackham). So, I really hope there is a possibility to solve the problem of “the homeless people” who would eat the grazing animals! In Norway we only have very small patches of *Geranium-sanguinei* (the same vegetation class at least, but without *Dictamnus*) along the Oslo fjord shores. Since the vegetation type is so rare, there are a lot of red listed species associated with it. Our plant scientists have now found that loss of grazing animals make the *Geranium sanguineum* to take over, thus suppress the other species, and that trampling by swarming beach tourists is the one factor which keeps this vegetation type survive.

I believe that the newly reclaimed steppe areas will need grazing in order to keep going. The steppe areas of Europe are shrinking every day, probably due to loss of pasture animals. This is hard to prove scientifically – to measure an ongoing process. In the steppe areas of the quarry, gradual accumulation of humus and mineral nutrients will build up a soil which will support another vegetation type than steppe. It would may be nice to have some intensely grazed areas and some areas with lesser grazing pressure.

Also, we suggested that some of the slope (with the less *Dictamnus*, but with much of the protected *Iris variegata*) be mown once a year. This way the problematic shrubs would be avoided and there would be a nice for several desired species, amongst them *Avenula pubescens*. We thought the site looked very much like a typical meadow, with a lot more herbs than graminoids.

**Chaloupky site** (may be I have confused the name of this site...)

**Close to Třebíčsko Chytrý in Vysočina Region. The site is connected to a old farm being used for children/nature activities.**

Slopes with natural grassland have been reopened and are now regularly grazed. Some of the slopes are very diverse, some are very trivial. The bottom of the slopes is a wetland with small lakes, but this part we did not come to see.

We would not have done anything different on this site if we were responsible! May be the worst challenge is nitrophilous weed vegetation on newly cleared land. Gradual deforestation over several years combined by grazing animals could be a method which stops the fertilizing effects from cut trees and shrubs. Another interesting method which slows down the solvent nutrition effects is to let the goats take away the trees.

When damage has happened, and some quadrates are clad in nitrophile vegetation, they will most slowly return to a stage with desired plant communities (natural grassland). In my experience, you can speed up the process by removing as much biomass as possible; hereby take away easy accessible N and

P from the site. This can be done by scything (no motor-rotor scythe!) the spot each week, and carefully raking and removal of all litter. Nitrophilous plants have broad leaves and a lot of biomass, and often use bad taste or others to repellent grazing animals. Cut nettles (*Urtica urens*) (which may threaten valuable vegetation on some cleared spots) will be eagerly foraged by grazing animals if they are left for drying some hours. Anthriscus plants (which there also were some of) and many other nitrophiles will be eaten by sheep only on early stages in very early spring, as they are avoided later in season. Same goes for *Deschâmpsia caespitôsa*, which defends itself by accumulation of silisium in the leaves. This grass, typically taking over in areas rich in N and P with some humidity in the ground, can dominate and suppress desired plants in the sword. If the grass has buildt up tussocks with dead leaves, the sheep will not touch it, and the tussocks have to be burned away in winter in order to prepare for early spring grazing.

**Salatuv kopec** (may be I have confused the name of this site with te former...)

**Close to Třebíčsko Chytrý in Vysočina Region. A hilltop with grassland which has been restored by cutting trees and let it be grazed by sheep.**

Very species rich, many typical grassland plants. Loosely set small trees and shrubs are kept.

No trace of old, dead grass demonstrated that grazing intensity was optimal. We would consider grazing to start earlier in the season in some of the site, and also to use stripe grazing, in order to intensify grazing in some parts. As this was not discussed on the site, this suggestion may be impropriate!

**Urbánkův palouk** between Jihlava and Trebic

A very well preserved wet meadow in protected area. Short stop, no questions!

**Tuesday 2<sup>nd</sup> June:**

**Řísnické louky** Podblanicko Region

Very well kept meadow, with very long continuity of management. It was kept as cultivated land (driest parts) intermingled with meadow (humid parts) before and under collectivisation period, and was first abandoned after the Velvet Revolution. Land trust has now mown the meadow for 10 years. The driest parts are processed with tractor. Also, some spots in the wettest parts are cut low (into the turf layer) in order to favour seed dispersal of a population of *Pedicularis sylvatica*. Mowing takes place in the end of June/beginning of July. Traditionally the cut material (from the wettest parts) has been used for stable bedding.

This is a very valuable cultural landscape locality. Impressive cultural heritage as well as biodiversity.

I wish I had asked more questions on site. For example:

Why cut so early in season? If the meadow material has been used for stable bedding material, surely traditional cutting term must have been during August or September? This would also give better conditions for butterflies and other flower/host-plant dependent insects?

Why is the lowest and wettest part allowed to grow willows and other trees and bushes? I think wet meadows, particularly this one, are so valuable that they not should be allowed to be shaded down by bushes and trees.

Are the wettest parts of the meadow not cut annually? It could seem to have some accumulation of litter. Maybe it is impossible some years, or maybe there are not enough people to do it? (In Norway,

Spaghnum peat land were mown only each second year (fens) or in a cycle of 3-4 years (moors). This because yields went down if the grass was mown more often. But I do not know if this applies for your sites)

How is the geology of the site? It was unclear if the geological base of ground water is acidic? Plants as *Eriophorum angustifolium* indicate acidic ground, but *Dactylorhiza majalis* is indicating basic conditions. If the water really is acidic, this is a very strong example of how moors grow into fens when mown...

### **Seen from the car: Heathland fragments under power line** (close to Ralsko)

The area is of interest because heathland dominated by *Calluna vulgaris* is very sparse in CR.

Short discussion about how to restore and manage the occurring fragments: *Calluna* and other dwarf bushes are very weak for competition and they disappear when higher vegetation takes over. This means that heathland is extremely dependent on management (burning, trampling, grazing – in ancient times sometimes cutting). Heathland pasture systems involve summer grazing on grass and winter grazing on the wintergreen *Calluna* sprouts. Research in coastal heathland in Norway and Scotland: Without grazing the dwarf bushes grow high and old, and get so bristle that trampling from herbivores will destroy the plants, whereas seed dispersal is dependent on either correct fire management or soil exposure due to the animals. See also the international mire conservationists:

<http://www.imcg.net/pages/home.php?lang=EN>

### **Blaník Vlasim: Castle Park**

Vast park with interesting biodiversity in some areas, often associated to old wood, partly introduced species. Many old trees in the collection. Some rather wet mown grassland.

### **Wednesday 3<sup>rd</sup> June:**

#### **“Jablonné Wetlands” site** Liberecko Region

#### **Large revitalized wetland with a public infrastructure; protection plan in preparation.**

Renaissance Castle Jablonné (“Neu Falkenburg”) with 60 ha meadows, forest, streams and ponds. Managed by local Fund since 1994. First restored some forest by shifting from *Picea* monoculture to mixed natural forest.

Reopened and recreated several ponds and small streams. Local fishing interested people keep putting out introduced fish in the ponds and streams, which is problematic for some of the local reptiles. Also planted in species which have been lost at the site; *Iris sibirica* and *Caltha palustris*. The latter did not manage over the winter. I found that *Caltha* only manages to establish under open sunlight, but very wet conditions.

Cleared/restoring several meadows. I guess meadow species will increase only after careful mowing and removal of plant residues.

Also taking care of old trees in an impressive tree row (*Quercus ‘Italica’*). We discussed tree care programs and how to take care of biological hot spot old trees. I would contact the tree care association <http://www.arboristika.cz/>.