

hay days



An important objective of the mowing and pruning management is establishing a parklike landscape with many transitions between grassland and wood. 26 May 2016.

These days, at the end of July, I have started to mow the vegetation around the house. Time and frequency of mowing depend mainly on the weather, the soil and on what you want to focus on. In my case one of the main objectives is enriching the vegetation with as many different spontaneous plant species as possible and then it is important to make the soil less fertile with your mowing management so that aggressive species have less opportunities.



Two days before, I had mowed this area, between the house and the vegetable garden and this day I gathered the hay on heaps. The small green shrub, [*Cornus sanguinea*](#), and the Almond tree are spontaneous and were left in place. The green patch of the grass [*Brachypodium phoenicoides*](#) (behind them) was also spared as it stays remarkable green the whole summer and is also, for its height, an interesting structural element in the vegetation. 23 July 2018.

The best way to this is cutting the vegetation and taking away the hay frequently. But not all of the grassland area on the terrain has a deep, fertile soil so the mowing is usually restricted to areas around the house and around the ponds where the soil is deepest. On very fertile soils at least two mowing sessions are necessary but in my case, after many years of taking away the vegetal material, I usually mow once or even skip one or two years. The best time of the year is heavily dependent on the weather, but if you only mow once a year on a relatively poor soil it falls usually at the end of July and the beginning of August. Then the vegetation is not yet completely dry and dead and you can still take away some nutrients from the area.



The grass species [*Bromus diandrus*](#)

was heavily dominant in the beginning as here in April 2007.

While mowing I try to avoid rare or important species to give them an extra chance of establishing. Also selecting or avoiding certain shrubs and trees is a very effective measure to steer the vegetation structure in the direction you want. My aim is to get a semi-open, semi-wild park landscape with many transitions among grassland, shrubs and wood. Apart from being pleasing to the eye, these kind of border structures are among the richest wildlife habitats. For example of the almost dozen orchid species, almost all of them grow in the half-shade of trees or shrubs.

After more than 10 years of applying this kind of management I can say that the results are important. There has been a clear shift in the vegetation with a higher variety of species and a more complex vegetation structure.



After several years of mowing, the quite ornamental grass [*Phleum phleoides*](#) seems to have replaced [*Bromus diandrus*](#). 20 June 2016

Aggressive species, especially the grass species [*Bromus diandrus*](#), have diminished, the vegetation is more open and gives more opportunities for delicate species. Very conspicuous is now the presence of species like [*Scabiosa columbaria*](#) and [*Orlaya grandiflora*](#) which attract loads of butterflies and other insects for weeks on end. In the undergrowth [*Hieracium pillosella*](#) and [*Prunella laciniata*](#) have considerably increased their area. [*Phleum phleoides*](#) is now quite dominant in some areas but it is a beautiful grass species almost all year round and leaves a lot of space for other herbs. Also the orchid species have probably taken advantage of the mowing management, demonstrating a steady growth in number and area along the years.



After some years of the mowing management *Scabiosa columbaria* has conquered big areas around the house, attracting loads of butterflies. 28 June 2018.

The hay obtained this way is an important ingredient for my vegetable garden. Together with straw, it forms the important mulch layer which covers, protects and enriches the soil. Once the vegetation is mown, I usually leave the hay a couple of days in place to give the seed some time to ripen and fall and not contaminate the vegetable garden. But more than 5 days doesn't seem to be recommendable, because then the nutrients start to leak out. The movement of nutrients from the wild garden to the vegetable garden is a really nice example of efficient recycling, with clear benefits on both fronts.



Mown area near the ponds. Neighbouring areas have not

such deep soil and are not mown. 24 July 2018.

For mowing I use a traditional scythe. No noise, cheap, almost no maintenance, good exercise: a powerful mix of advantages of the scythe and yet almost forgotten by many people. In my situation it is also an ideal tool because instead of breaking down the vegetation like the traditional grass mowers or weedwackers do, it leaves the vegetation intact enough to easily take away and use as a mulch in the vegetable garden. The relatively short blade of 40cm of my scythe favours a more detailed selecting and avoiding of certain plants and shrubs. The irregularity and, in my case the lack of professionalism, in the handling of the scythe is more a feature than a fault. It offers welcome variation and opportunities in the vegetation layer, and the same holds true for the mowing in phases and on different days on different spots, keeping in mind to do the same thing more or less every year on the same spot. Can you still follow this ☐



This plant *Teucrium capitatum* grows on only three places and so was spared. The short blade of my scythe (40 cm) permits this kind of selection. 24 July 2018.

Apart from the mowing, an important factor has also been the steady growth of (new) shrubs and trees. The sheep herds that roam the region do not enter the terrain and this might be an important factor for the survival of many shrub and tree seedlings (and orchids!).

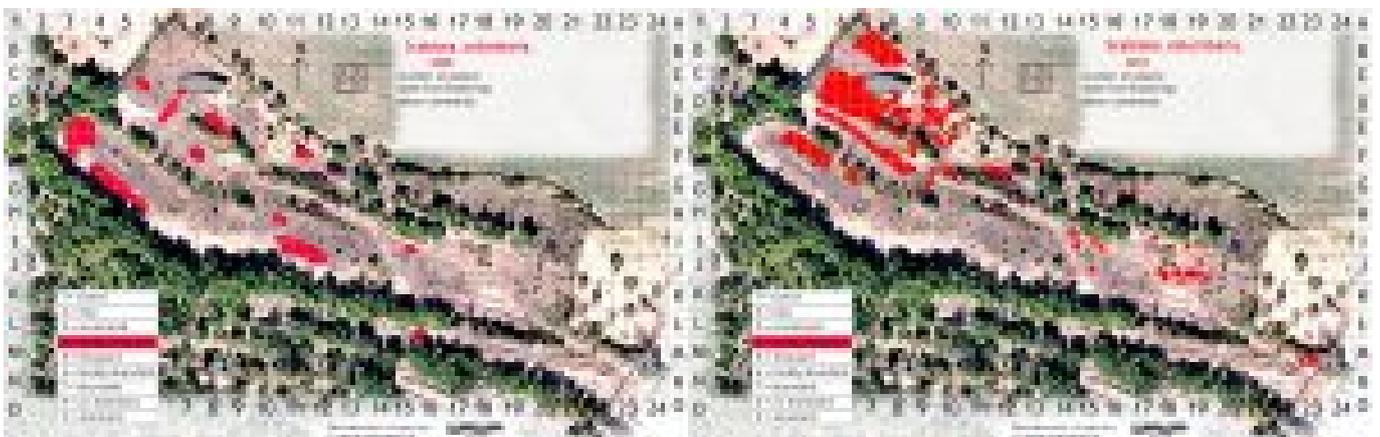
The general aspect of the terrain is really going into the direction of a

beautiful parklike landscape. At the same time the inverted amount of energy and time has actually been quite limited. It is more a question of steering, encouraging and discouraging than actively manipulating and imposing. Just switching nature on!

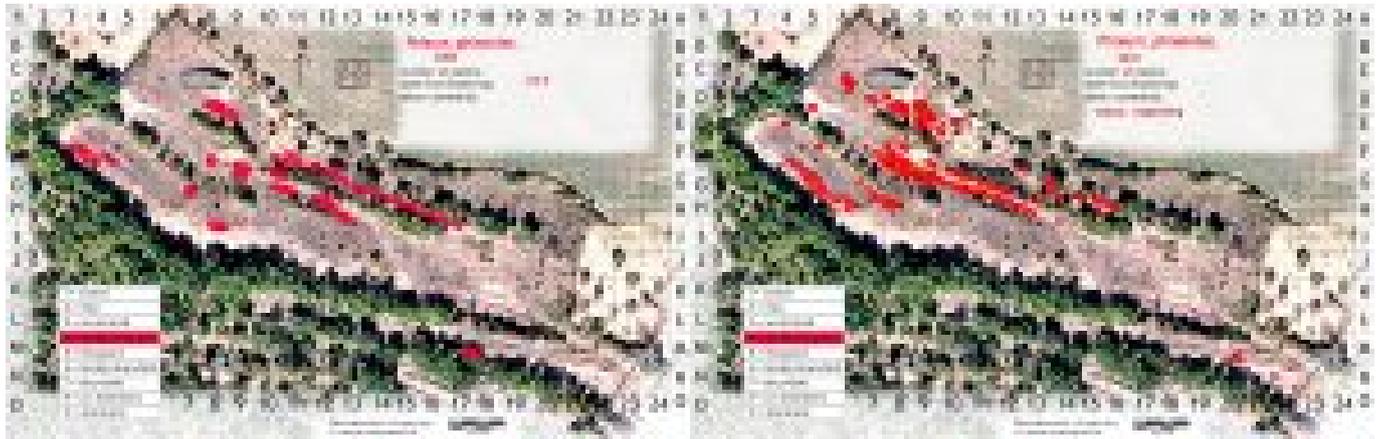


The hay harvest goes to the vegetable garden where it makes a nice mulch layer. 25 July 2018.

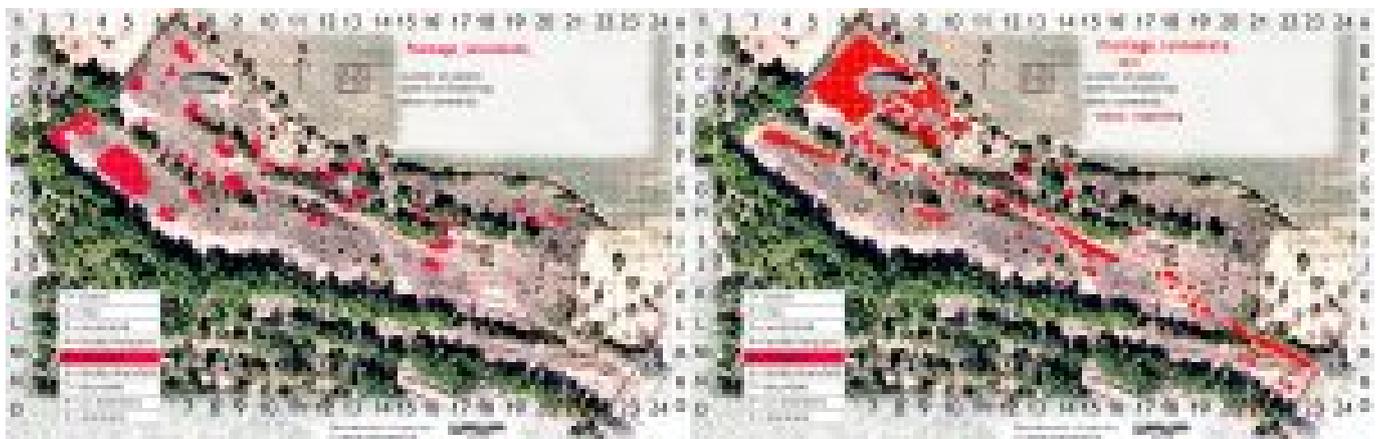
As an illustration of the shifts in the vegetation caused by the mowing regime, below you can see the distribution maps of some species which were especially affected, increasing or decreasing their numbers. Fix your attention to the area around the house in the northwest corner where most of the mowing takes place. Also the distribution maps in [my article about the orchids on the terrain](#) are quite illustrative.



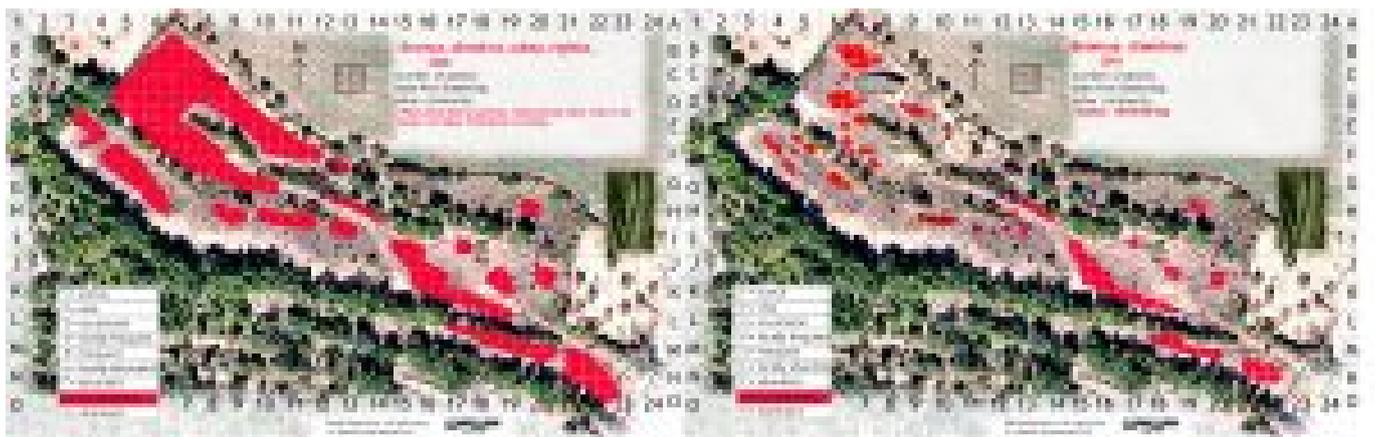
Changes in the presence of [Scabiosa columbaria](#) over a 10 year period.



The same for *Phleum phleoides*



The same for *Plantago lanceolata*.



The same for *Bromus diandrus*.

solar radiation



The sun is shining more than 300 days a year in this region. Better use its infinite power. 11 November 2017.

I already use solar energy for my electricity supply and for a hot shower (in the greenhouse), but for the heating of my straw bale dwelling I was heavily dependent on the wood stove, apart from the heating effect of the big window of the living room which is exposed to the south. A straw bale building is extremely well insulated and a minimum amount of heating can already have a significant effect. A radiant floor or radiant wall heating, powered by a solar panel seemed to be an interesting option, especially because I can make use of the existing plaster layer of clay inside the walls of the house.



Wood stove and big window in the southern wall provide heating, but a straw bale house offers more interesting opportunities. 4 March 2015.

Heating from radiation is much more efficient than the traditional heating by convection and a constant stream of water of 30 or 40° C through a radiant layer of clay on a wall or floor could do the trick. Solar panels are capable of supplying such temperatures, even the DIY variants, which I elected. The internet offered again almost all of the necessary knowledge, and I started with quite some optimism in the autumn of 2017. In my case it was obvious to go for the walls instead of a radiant floor system as I can make use of the extreme insulation quality of the straw bales just behind the radiant plaster layer of clay. In the floor I don't have such an insulation layer. There are also commentaries about certain health issues of floor heating as of having a bad effect on blood circulation.

The basic idea of the heating system I wanted to install is relatively simple: the water in 100 m of black (irrigation) tube installed in a coil on a panel is heated by the sun and is driven by a pump to another 100 m of special heating tube imbedded in a clay layer plastered against the straw bale walls inside.



It took me almost two days to sew the 100 meter heating tube into the nylon net, but in combination with more than 1000 staples the installation is perfect. 27 September 2017.

After some research in shops and on the internet I decided to 'sew' the interior, heating tube in a nylon net, hang this net from the ceiling and fix the net with staples to the wall. The tube was just flexible enough to permit this kind of sewing and the net, bought in a garden centre, was more than strong enough to hold the weight. I chose 7 meters length of the round western wall for collocation, giving a quite even radiation through the whole space of the living room. Around 1000 staples in the wall fixed the whole system (7m x 2m) neatly to the wall. This way I saved a considerable amount of money, time and energy in comparison with the standard systems sold on the market. Then I had to apply the clay plaster between the tubes.



Applying the clay mix with a trowel. Before applying I sprayed abundant water and once applied it is important to let it dry completely before starting with the next layer. 4 October 2017.

The mixture was based on experience and consisted of 25% clayey soil from my own terrain and 75% sand, both of them screened for a fine grain. I had read some warnings about difficulties of applying this plaster on a white washed wall, but it went well, just making the walls a little bit wetter than usual before applying the plaster. Two layers were applied, giving a total thickness of the new layer together with the existing layer (with the whitewash in between) of about 5 to 6 cm, which is quite nice, not only for the radiation of the heat but also as a buffer to help stabilize temperature and humidity. Afterwards the walls were whitewashed again, and the situation was almost exactly as before: only the digital thermometer, connected close to the tube, shows.



This digital thermometer, installed on an electricity socket, is connected with its sensor close to the heating tube. After whitewashing the wall it's the only element noticeable of the heating system inside. It keeps track of the temperature near the point of entrance where the water is hottest. On a typical sunny winter day it stabilizes around 28°C. 30 October 2017.

The interior system is connected to the exterior system through a hole in the southern wall. For the exterior solar panel I used the much cheaper ordinary irrigation tubes (16mm). Connection with the interior tube was supposed to be a problem because this tube is must be connected to metal connectors, but the ordinary PE irrigation connector used for irrigation has worked fine since then. The black tube was coiled on a wooden structure of OSB boards and recycled pallet boards. For some insulation and light reflection I covered the OSB board with an aluminum insulation sheet before installing the tube. The coil was covered by plexiglass (or poly(methyl methacrylate) (PMMA) which is stronger and easier to cut, transport and manipulate than glass.



The DIY solar panel, just two meters separated from the interior tube system and exposed to the south. It measures about 2 x 1 meter and gives support for 100 meters of black irrigation tube. 18 September 2017



Pump, thermostat and thermometers are installed at the back of the solar panel. The tubes are insulated with foam rubber socks. The front of the panel is covered with a sheet of plexiglass. 28 November 2017.

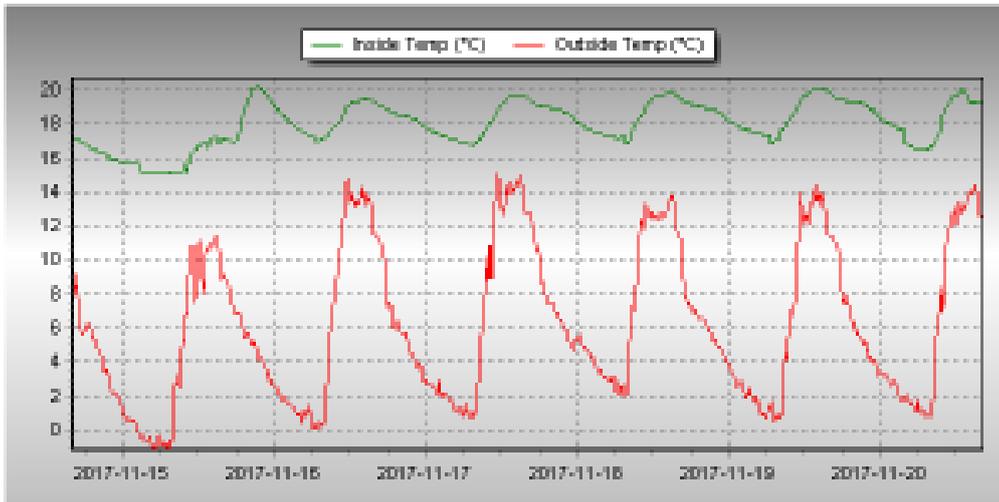
Then the two systems had to be joined and connected to a pump. I bought an ordinary central heating pump, using its lowest power setting (around 8 watt). Perhaps you can try your luck with much cheaper pumps from China via internet, but I preferred the reliability (and expertise) of a good pump from a good local shop. To get the 20 liters of antifreeze water mix into the

system, without air, was a bit tricky. The pump didn't have the power to just suck the antifreeze water from the water tank. After some trying and testing the solution was to connect the system to the water mains and first fill the system with ordinary water. Once working, the pump was able to suck the antifreeze mix from the tank. I stopped the sucking when the outlet water turned antifreeze blue.



The pump works almost without noise, consuming less than 10 watt in its lowest power setting. It's only working when the sun shines, and then my regular electric solar panels are also working, so no power issues here. 23 November 2017.

The pump is regulated by a thermostat, which this time I did bought via the internet. The first one failed however but the next one (both of them around 15€) does the job fine, that is, starts the pump when the temperature gets over 30° C and disconnects when the temperature drops below 28°C (values obtained after some testing). The temperature is measured with a probe located in front of the solar panel inside it's own 'greenhouse' box.



Data from my weather station: inside (green) and outside (red) temperatures. On the 15th of November 2017 the wood stove was lighted because of cloudy cold weather. Then the sun started to shine and was able to maintain temperatures around 19°C inside without the stove.

At the time of writing (midsummer) I have tried the system for one winter season and the results are more than satisfactory. I saved around 35% of wood for the stove. Spring was exceptionally cloudy this year so the results might even get better in the future. It is especially during early spring when the radiant wall might shine. Temperatures are still chilly then but days are getting quite longer and the sun quite stronger. Also the general climate inside has improved, perhaps just 2°C higher, but living with 18° instead of 16° (without the wood stove) makes a difference.



After applying the white wash, ready to radiate solar

power. The heating is invisible and noiseless. 10
November 2017

I also tried the system in summer, activating the system at night as a means to refresh the inside climate, but the effect was minimal. I suppose the difference (averaging 23°C inside and 19° outside at night) is too small to be effective.