

RESTORATION OF FALLOW DRY GRASSLANDS IN COOPERATION WITH LOCAL FARMERS

TISCHEW, S.¹, MANN, S.¹, SCHECHER, K.¹, JÄGER, U.²

¹ Department for Nature Conservation and Landscape Planning, Anhalt University of Applied Sciences
Strenzfelder Allee 28, 06406 Bernburg, tischew@loel.hs-anhalt.de, mann@loel.hs-anhalt.de

² Salix-Büro für Ökologie und Landschaftsplanung, 06198 Wettin, Lettewitzer Straße 20, salix@t-online.de

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Abstract: Currently almost all dry grasslands on the scarps of the Saale river valley are encroached. Therefore, in cooperation with local farmers a pilot project for all-year goat grazing was initiated in two Natura2000 sites in 2006. Already the first grazing period resulted in a successful reduction of woody plants as well as of grasses and litter layer, whereas herbs benefited from that development. We learned that at the beginning of such projects intense discussions with local stakeholders are necessary and we had to come across many prejudices against that new grazing management.

Introduction

The upper Saale river valley (Saxony-Anhalt) harbours two important Natura2000 sites with sub-pannonic steppic grasslands, semi-natural dry grasslands on calcareous substrates, and siliceous rocks with pioneer vegetation. A more than thousand-year-old tradition of migratory herding of sheep and goats in combination with varying geomorphology and edaphic conditions resulted in attractive mosaics of these habitat types. After the political change in the former GDR sheep breeding became inefficient and declined rapidly, whereas goat breeding decreased already in the middle of the last century. Currently almost all dry grasslands on the scarps of the river valley are encroached. However, remnants of the Natura 2000 habitats as well as some red list plants were still present. Manual removal of the shrubs on steep slopes is not only expensive (up to 8500 €/ha) but must be repeated in relatively short intervals because of their fast re-growth. Moreover, the lack of grazing led to unwanted dominance of grass species and accumulation of grass litter on the less steep parts of the slopes. Therefore, in cooperation with local farmers a pilot project for goat grazing in two Natura2000 sites was initiated in 2006. In contrast to migratory herding labour costs for this grazing management are much lower (approx. 1 hour per site and day for controlling and animal care) and therefore local farmers were willing to resume goat breeding.

Following goals were formulated for the project: (1) Reduction of the shrub layer up to a degree of 20%, (2) site-specific decline of grass dominances and reduction of grass litter, (3) preservation of red list species, (4) continuation of the grazing after the end of the project using the standard state subsidies for farming in Natura 2000 sites. Before the project could start we had to fight several prejudices against year-round goat grazing at these steep slopes because little experiences with that grazing regime is at hand in Germany. Local population feared erosion processes on the slopes. Hunters disapproved the fences and the future reduction of the shrubs because they constrict their hunting activities. Nature conservation authorities and NGO's feared overgrazing or eutrophication effects related to the remnants of the Natura 2000 habitats as well as the decline of rare species on the sites. Therefore systematic evaluations of the project goals

were planned and implemented for all sites. Here we present first results of the grazing site “Mücheln” which was the project sites we could start with the grazing regime already in early summer 2007 whereas at the other four sites grazing started in autumn 2007. We explored the following objectives: (1) Which feed sources do the goats predominantly consume? (2) Are there seasonal differences in feed sources? (3) Which areas do the goats predominantly use and are there negative effects on occurrences of rare plant species? (4) How fast brush encroachment can be reduced and which group of herbal plants benefits from the decline of shrubs?



Figure 1. Goat grazing on the site Mücheln in the upper Saale river valley (Friedrich 2007)

Materials and methods

The pilot project started in 2006 with five permanently fenced pastures for goat grazing with a total area of 25 ha within the two Natura2000 sites. We are using predominantly Boer goats since they are robust and known for their potential to control brush encroachment (e.g. Aharon et al. 2007). At the beginning of the project agreements about the management of the sites were made with the farmers concerning the number of goats per site (6 up to 10 goats / ha depending on the degree of encroachment) and that no additional feeding is allowed. Before the grazing started shrubs covered 35 % - 75 % of the sites. The gradient of the slopes varies from 10° up to 90° (on average 55°). In 2006 and 2007 comprehensive basic line investigations (“status-quo analysis”) were

carried out before grazing started. These analyses enable “before and after comparisons”. We investigated vegetation on permanent plots (14 – 20 per sites) using Londo-scale (Londo 1976) and we mapped all locations of rare plant species. Additionally we marked five individuals of each shrub or tree species we found on the site and we took photos against a gridded white sheet to document the browsing by repeating that procedure after grazing started. In July and in November 2007 feeding and ranging behaviour was investigated by observing three goats individually on three days from the first daylight until twilight and by documenting in 5 minutes-intervals the botanical composition of the livestock diet, where and when they rest, walk, drink or defecate.

Results and discussion

In two third of the monitored five minutes intervals the goats predominantly browsed or grazed with a higher percentage of browsing in late autumn, which is in accordance with other investigations (e.g. Aich et al. 2007, Aharon et al. 2007; figure 1 left).

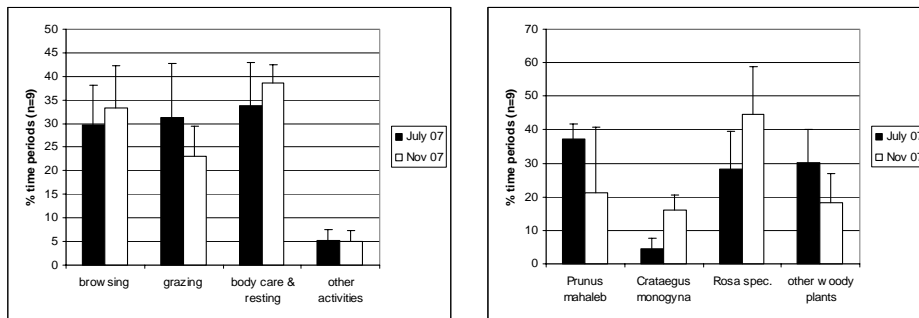


Figure 2. Percentage of 5 minutes periods in which the goats predominantly consumed shrubs (browsing) or herbals (grazing), in which they rested or did body care and in which they did other activities like drinking, defecating or walking (left). Percentage of 5 minutes periods in which the goats consumed predominantly the listed species (right). The error bars show standard deviation.

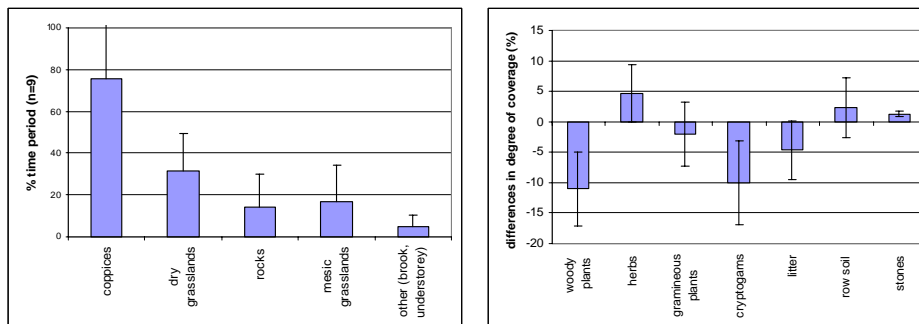


Figure 3. Percentage of 5 minutes periods in which the goats predominantly stayed in the listed biotopes (right, n=9). Differences in degree of coverage of the listed plant groups and layers between June and October 2007 (left, n=16). The error bars show standard deviation.

In July the goats browsed more intensively on *Prunus mahaleb*, in November they preferred *Rosa* species and *Crataegus monogyna* (figure 1, right).

Contrary to the prejudices the goats stayed comparatively few time periods on the top of the rocks. Most time they spend in the coppices (Figure 2, left).

Already the first grazing period resulted in a successful reduction of woody plants as well as of grasses (predominantly *Brachypodium pinnatum*) and litter layer, whereas herbs benefited from that development. That shows the great potential of the Boer goats for controlling encroachment (see also Aharon et al. 2007). The fast reduction of encroachment certainly resulted also from the comparably high stocking density which has been intentionally planned for the first project period in which density of woody plants should be reduced to a maximum degree of 20 percent (clearing phase). In the second phase we will gradually reduce the stocking density (= maintenance phase). The slight increase in the degree of row soil and stones is to date of no relevance for the feared erosion processes but should be carefully monitored in the future. The monitoring of rare species (e.g. *Gagea bohemica*) showed no decline in population size or even already a slight increase (e.g. *Dianthus carthusianorum*, *Stipa capillata*).

Conclusions

Our first results show the high effectiveness of the all-year goat grazing with relatively high stocking density in reducing encroachment on steep slopes with remnants of high valuable grassland and rocky vegetation. However, further control of the grazing management and scientific monitoring is needed to guarantee the successful development of habitats and rare species as well as to prevent erosion processes. We learned that at the beginning of such projects intense discussions with local stakeholders are necessary and we had to come across many prejudices against that new grazing management which delayed the start of the grazing at some sites. An important precondition of the project was the financial support for fences and watering places because most of the involved local farmers were small cooperation's or sideline farmers (see acknowledgements). Though fencing reduced labour costs compared to migratory herding, further effort must be focusing on marketing the regionally produced organic meat which is of course more expensive than commercially produced meat from abroad.

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