DIVERSE IMPACTS OF NATURE CONSERVATION GRASSLAND MANAGEMENT

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Introduction

The grasslands represent a respectable scale out of protected areas in Hungary. The total area of protected grasslands (220.000 ha) is the 2nd largest amongst land use areas (Kiss-Penksza 2006, Szombati 2006). Most of the protected natural grasslands are grazed, mainly by indigenous animal species (Gencsi 2005, Póti et. al. 2006).

In order to conserve certain plant communities and habitats, mowing is necessary as a grass management method (Boecker et. al. 2006). The process of grazing, mowing and weed-control mowing of grasslands in ESA (Environmentaly Sensitive Area) programs are carried, and can be carried out under strict rules, either (Szemán 2005, Grónás et. al. 2006, Nagy 2005).

The changes in grass communities due to grass management plans and rules of nature conservation must be traced continuously. The necessary measures must be taken afterwards, even the changes in the management plan (Penksza 2006, Vona et. al. 2006, Kiss et. al. 2006). The keeping of the regulations must be followed with attention, too (Gencsi 2005, Madarász et. al. 2005).

Material and methods

In my work the effect of grass managements with three different purposes are introduced.

1.) The reconstruction and conservation of damp habitat. In order to facilitate the nesting of shore birds in Hortobágy region on grasslands established on former rice-plantations with *Agrostis stolonifera* as main grass. The testing and comparison of three different grass management methods is carried out since the starting date of reconstruction (2003). Management methods: untreated, mown (once in a year) and grazed (mainly by grey cattle).

2.) The protection of bustard *(Otis tarda)* habitat in the National Park of Kiskunság (Bösztör). The grassland with main grasses of *Agrostis stolonifera* and *Festuca pseudovina* is grazed by few goats only. One part of this area was separated in order to investigate the most appropriate harvest times and utilization intensity of the plant community. The experimental variants are as follows: two mowings/year (end of June and in 2nd decade of October), three mowings/year (2nd decade of May, 1st decade of August and 2nd decade of October), four mowings/year (2nd decade of May, end of June, 1st decade of August, 2nd decade of October). Only the first year of the experiment is closed (2006).

3.) The protection (establishment first) of the habitat of Orsini's viper*(Vipera ursinii rakosiensis* Méhely*)* in the area of the National Park of Kiskunság. The monitoring of approx. 2000 ha grass plant community and the investigation of animals consumed by Orsini's vipers have been done by the experts of the sub-regions previously. Mostly

degraded and seriously degraded grasslands have been found, offering low amount of consumable animals. The survey and sampling, as well as the photo-documentation of different areas were done in October 2006 in order to record conditions of that time in grass management aspect (J. Tasi). By the comparison of these, and on the basis of habitat descriptions and treatment regulations prepared by the experts of the National Parks, the treatment (based on viper's habitat) of the area must be weighed carefully.

Results and discussion

1. Nature conservation grass management of damp habitat (Hortobágy)

Table 1. shows data of the survey of grass community carried out in July 2006 under three treatment methods. In the 3rd year of the experiment significant difference was found regarding the composition of the plant community. The biodiversity of the grass community was lowest under untreated variant, the cover of grass species together with weed grasses is 99%. The number of species is 30. The biodiversity of the mown area is adequate with 57 species, but grasslike plants are dominant. The cover of valuable grass species is not more than 25.7%, therefore both in nature conservation and fodder production aspect the plant composition of the grassland is unfavourable. The grasses, which offer required value for the animals, are present with 87.4% cover on grazed area. The cover of grasslike and other plants with lower fodder value are present with such a low rate (Σ 7.9%), that grazing is not hampered at all. The number of species of pasture is 41, biodiversity is satisfactory. Approximately 30% of the total 200 ha area is bare, 40% is water covered. The surveys have been carried out on the rest 30% area.

Table 1. Changes in the composition of grassland due to different treatment methods (cover %) Hortobágy, July 2006

Plants	Untreated	Mown	Grazed
Grasses	90.4	25.7	87.4
Weed grasses	9	0	0
Grasslike plants	0.4	53.4	2.2
Leguminous plants	0	1.2	1.3
Other plants	0.3	19.7	5.7
Uncovered	0	0	3.4

2. Great Bustard *(Otis tarda)* habitat (National Park of Kiskunság)

Figure 1. shows the dry matter production and distribution regarding the three different treatments. The total dry matter production of the grassland dominated by *Festuca pseudovina* and *Agrostis stolonifera* in the rainy summer of 2006, at two mowings was 5.44 t/ha, at three mowings 4.36 t/ha, and was 4.31 t/ha after four mowings. Regarding the yield, the two-mowing variant with late 1st mowing (due to protection of bustard habitat) was suitable. During dry summer 2nd growth is not produced after the 1st late mowing, which reduces yield significantly. Due to late mowing, the yield of high quality (digestible) fodder is significantly lower. The subsidy is to compensate this kind of shortage. Grazing is modelled by the four-mowing variant. Due to more balanced yield distribution (37-34-15-14%) this variant has the most favourable animal-bearing capacity.

the lowest amount of additional fodder is needed. Owing to well-timed grass management, this variant has the highest yield quality.

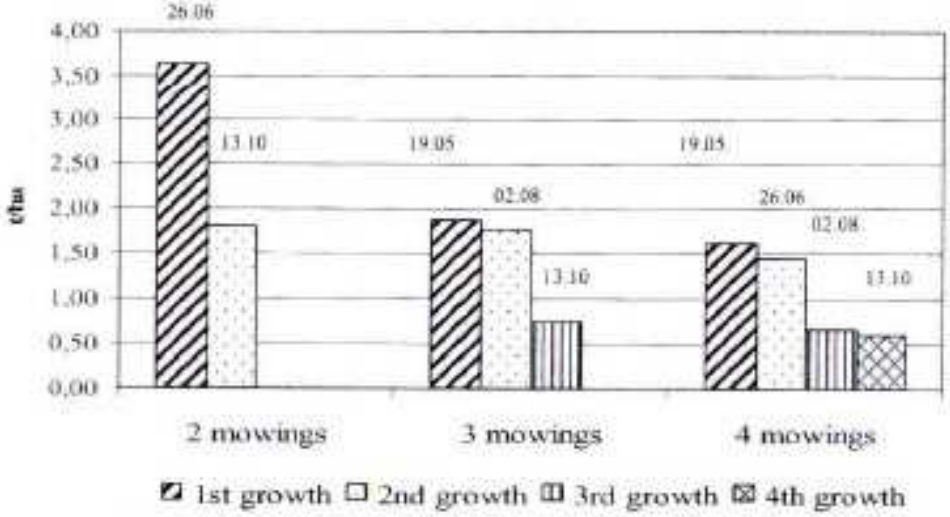

Figure 1. Dry Matter Production (Bösztör, 2006)

3. The protection of the habitat of Orsini's viper *(Vipera ursinii rakosiensis* Méhely*)* (National Park of Kiskunság)

At present, the treatment is focussed on the protection of orchids and nesting spots. Steppes, as well as mud meadows with *Molinia coerulea* (L.) Mönch. can be found. The grass is mainly grazed by cattle, at the average of 0.2-0.4 full-grown animal/ha. The regulations regarding the starting date of grazing are different (depending on the areas), but grazing before 5th August is not allowed. Cleaning mowing is allowed only on 10% of the total treated area. Mowing is possible earliest after 20th September. According to the aforementioned regulations, the fodder is ripening standing and left on the field, retarding shooting at spring time and causing very low quality. Due to aged and low quality fodder, the animals pass through the pastures and graze little. The rancid plants left behind are unfavourable due to organic matter accumulation regarding nature conservation aspect, either.

Conclusions

1. On damp habitats of Hortobágy in order to increase the number of hatching shorebirds, as a result of grazing grass management the most appropriate plant community and landscape was established (30% bear spots, 30% short grass and approx. 40% damp habitat). Least applicable was for mowing purpose utilization.
2. In order to protect the habitat of Great Bustard *(Otis tarda)* in the National Park of Kiskunság, 1st mowing is necessary to be done in the 2nd part of June. Regarding the yield it is an acceptable solution for the investigated grass species, but the deficiency in quality must be compensated by all means for the stock-breeder. It is necessary to ensure grasslands in any case, where grazing can be started at the end of April – beginning of May at latest.
3. The present grass management regulations (based on orchid- and bird protection) for the habitat of Orsini's viper *(Vipera ursinii rakosiensis* Méhely*)* have rather

unfavourable effect on the composition of grass community and the quality of forage, either. The present quality and condition of grasslands is not suitable for vipers, either. Stock-breeders can not keep the regulations. In order to facilitate the swarming of animals consumed by Orsini's viper and ensure satisfactory habitat conditions for vipers, management regulations must be modified.

The grass management with nature conservation purpose must be subordinated to the goal to be reached, but the compliance of the regulations should be kept in mind! If the stock-breeder has nothing to feed to his animals, even the compensation through National Agricultural Environmental Management Program will not be sufficient!

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