

MONITORING OF LARGE HERBIVORES IMPACT TO TREE NATURAL REGENERATION IN UNIVERSITY FORESTS

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INTRODUCTION

The University Forestry Enterprise (UFE) is managed by production processes close to nature. The intensity of hunting here derives from the annual monitoring of the effect of large herbivores game species on the vegetation, especially on the natural regeneration of food-attractive tree species.

The method of control and comparison areas (KSP) was used to analyze the state of forest regeneration damage. The establishment, maintenance, control and registration of results from the KSP are governed by the currently valid legislation. During field investigations, already established (according to Decree No. 101/1996 Coll. and Methodical Instruction of the Ministry of Agriculture No. 14/1996) KSP are evaluated. Here are all the rules for placing, building and evaluating damage on the KSP. Due to the fact that the density of KSP and their current state did not allow obtaining a sufficient amount of the necessary data, the KSP network was supplemented with a network of monitoring areas.

METHODOLOGY

From the analysis of data obtained from 25 monitoring areas and 22 KSP in the UFE in 2023. During the survey, the number of tree species represented in the fenced and open part of the KSP was determined. In addition, the height of 15 saplings of each of the four main tree species growing closest to the center of the area was measured, the current proportion of damaged terminal shoot was also determined in the free area, and other forms of tree damages caused by the game were also determined. The measurement was supplemented with damage data from monitoring areas.

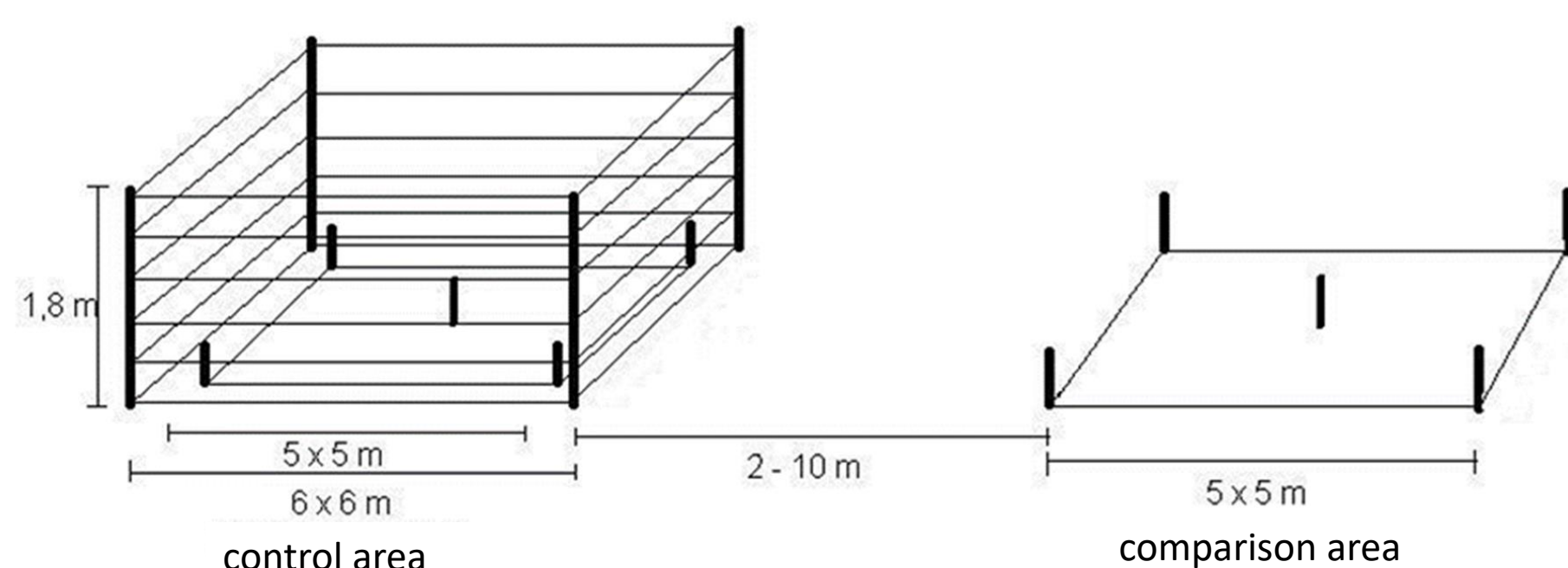


Fig. 1: Design of control and comparison areas (KSP).

RESULTS

On the UFE, there are on average 0.72 fewer tree species per KSP in the open area (3.7) than in the fenced part (4.4), which is 16.5% less if we consider that in the fenced area without 100% of tree species are affected by game. The browsing caused by animals eliminated an average of more than 1/6 of tree species on particular areas of the KSP.

There are in 50% of the cases on the KSP, the number of tree species was greater in the fenced part than in the open area. Therefore, in half of the cases, herbivores reduces the number of tree species growing in regeneration on KSP.

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For 4 out of 17 (24%) tree species on the UFE, there was a greater number of individuals in the fenced than in the open part of the KSP. 21% of beech trees are completely destroyed in the natural regeneration of the forest on the KSP, but in the case of other tree species, there is mainly a higher number of individuals on the free part of the KSP, which is a positive result. The difference was found between the average height of trees of all tree species in the fenced part (99 cm) and in the unfenced part (49 cm). The difference is 50 cm, which means that the trees in the open area are 50% smaller than in the fenced areas (Fig. 1). The browsing of trees is so strong in the study area that even in the stage of forest regeneration, it can reduce the height increase of tree species by 1/2 on average.

From the results of the comparison of 22 control and comparison areas - KSP and 25 monitoring areas - from 2023, a strong affect of game on forest regeneration is evident. The investigation was carried out on 1,584 trees in forest regeneration at KSP and the damage was assessed on 1,756 trees at KSP and MP.

THE AVERAGE HEIGHT OF THE TREE SPECIES

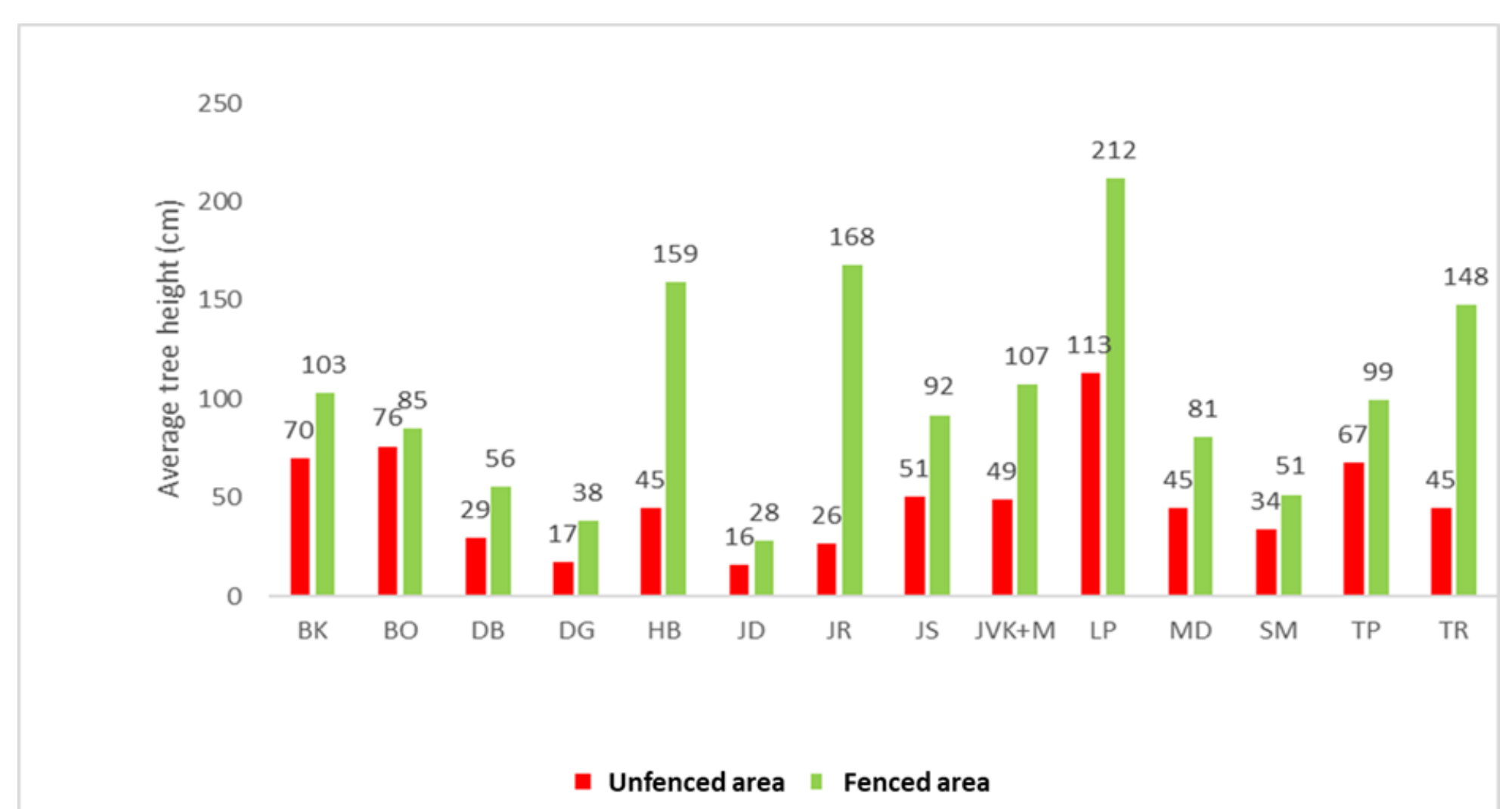


Fig. 2: The average height of the measured individuals of the tree species present in the unfenced and fenced part of the KSP. (BK-beech, BO-pine, DB-oak, DG-douglas fir, HB-hornbeam, JD-fir, JR-rowan, JS-ash, JVK+M-maple, LP-linden, MD-larch, SM-spruce, TP-poplar, TR-cherry).

The browsing caused by animals eliminated 16.5% of tree species on particular KSP.

For 24% of tree species in the UFE forests, there was a greater number of individuals in the fence than in the open part of the KSP. 21% of the BK is completely destroyed by animal damage in the forest regeneration, but for other tree species there is a greater representation of tree species on the free part of the KSP, which is a positive result on the whole.

The difference in the average height of saplings outside and inside the fence averages 50 cm (50.5%) and therefore causes a disproportionate loss of growth. The browsing of the trees in the study area is so strong that even in the stage of forest regeneration, it can on average reduce the height increase of tree species in regeneration by 1/2, which has a significant effect on the economy of forestry.

The critical limit of growth loss of 25-27% is exceeded in 100% of the more frequently represented tree species (6 out of 6) in UFE forests. This not only causes economic losses, but as a result of intraspecific competition, attractive tree species are reduced and suppressed.