

Contents and Abstracts of the Bulletin of Forest Science

Bulletin of Forest Science (Erdészettudományi Közlemények) is a journal supported by the Forest Research Institute of the Faculty of Forestry of the University of Sopron. The papers are in Hungarian, with English summaries. The recent issue (Vol. 11, 2021) contains the following papers. The full papers can be found and downloaded in *pdf* format from the journal's webpage (www.erdtudkoz.hu).

Vol. 11, Nr. 1, 2021

Katalin RUSVAI and Szilárd CZÓBEL:

Weed invasion of bait sites in the Mátra landscape Protection Area

Abstract - Our aim was to assess the effects of feeding places for hunting wild boar (bait sites). We selected 3-3 sites, located in forest, clearing area and on road. 4 transects were arranged from the centre of the sites, each consisting of 22 1 m² quadrats, where vegetation surveys were carried out in several years and periods. For the seed bank experiment, soil samples were taken at the centre of each bait and control sites. Then, seedling emergence method was used. We also measured soil P, K and NO₃⁻. Bait sites in clearings were the most invaded, possibly due to greater accessibility. Forest baits were the least weedy, road baits' degradation depends on their exposure and usage. The proportion of weeds was always higher in August, at clearings T4 weeds dominated. We detected a stress gradient: weeds were dominant in the centre, but with the distance they decreased, while natural species increased. At baits, the proportion of weeds in the seed bank was larger than in the control. Soil P, K and NO₃⁻ was also higher in the centre of baits. Besides degrading the vegetation, baits have negative effects on seed bank and soil as well, so they could be the focal points of biological invasions

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Arnold ERDÉLYI, Judit HARDTDÉGEN, Ákos MALATINSZKY, Csaba János LESTYÁN and Csaba VADÁSZ:

Impacts of different silvicultural practices on the spread of tree of heaven (*Ailanthus altissima* (Mill.) Swingle) in calcareous sand forests

Abstract - We examined the changes in the prevalence and abundance of Tree of Heaven in several forest stands in the Peszérierdő (Central Hungary), where logging activities were carried out or previously stump deposits were made. According to our results, selective thinning and clear-cutting can have a significant effect on the activation of the seed bank of Tree of Heaven. Due to the abrupt growth of light availability, the soil disturbance and the other effects of log transport, the forest management activities may result in a reforestation, where the Tree of Heaven becomes dominant. In comparison to the spontaneous spread measured in control stands, forest management activities resulted even in a hundred times higher growth in both the prevalences and abundances of Tree of Heaven from one year to

another. In the surveyed artificial reforestations, the stump deposits proved to be the main objects where this species can regenerate from. It can resprout from its stumps and root remnants as well, then propagate within a few years and invade the intact, young stands. In addition – based on our local observations –, we also highlight the verticillium wilt as a control possibility against the Tree of Heaven.

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Csenge Veronika HORVÁTH, Flóra TINYA, Bence KOVÁCS and Péter ÓDOR:

The effect of different forestry treatments on the understory vegetation of a sessile oak-hornbeam forest

Abstract - In the framework of a multitaxon forest ecological experiment, we compared the effects of different treatments of rotation and selection silvicultural systems on the understory vegetation of a sessile oak–hornbeam forest stand. The five treatments were: clear-cutting, keeping a retention tree group in the clear-cut, preparation cutting, gap-cutting, and closed mature stands were used as control. We compared species richness, total cover and composition of the understory vegetation, and cover of four plant functional groups in the second and fourth year after the interventions across the treatments. Species richness and total cover increased the most until the fourth year in clear-cuts and gaps, moderately in preparation cuts and the least in retention tree groups. Species composition changed the most in clear-cuts: here the cover of non-forest herbs increased, while species typical of woodlands could prevail in gaps. Gaps and preparation cuts provided the most favourable conditions for forest herbs and for the cover increase of woody saplings, supporting that harvesting methods sustaining continuous forest cover could possibly integrate both conservation and timber production aims.

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László BALI, Dániel ANDRÉSI, Katalin TUBA and Csaba SZINETÁR:

Ground-dwelling spider fauna of the Nyíri-forest near Kecskemét, Hungary

Abstract – During our survey, we investigated the ground-dwelling spider fauna of five forest sub-compartments (32-117 years old; with species as grey poplar, pedunculate oak and black locust) belonging to the Nyíri-forest of Central Hungary, using pitfall traps. Sampling was conducted during the year of 2016, through 190 days. We collected 1802 specimen of 39 spider species. *Pardosa alacris* was the most common species, with 361 specimen. Gnaphosidae was the most species rich spider family, with 8 species. Most of the trapped spiders were cursorial hunters. The community showed the highest activity during June. According to the indicator species, the surveyed forest can be considered open and relatively dry, and in a good condition regarding its naturalness. The values of the Shannon diversity indices and the equitability were generally low. According to the ordination analysis, the samples collected from different forest sub-compartments separated from each other noticeably.

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Balázs Gábor BALÁZS, Katalin TUBA and Ferenc LAKATOS:

The role of microorganisms in the ecology of bark beetles (Curculionidae, Scolytinae)

Abstract – Some bark beetle species (Curculionidae, Scolytinae), especially in coniferous forests, are major factors for mass mortality of trees. Although bark beetle species usually do not attack healthy trees, they can colonize weakened or dying trees. Some species may have massive outbreaks, especially under defined abiotic conditions (like hot and dry weather or

after wind and snow damage) and can have significant economic and ecological effect. Microorganisms associated with bark beetles such as fungi or bacteria play important roles in their colonization success, development, and gradation. This paper provides a review on the effects of microorganisms on the biology of bark beetles and interactions between bark beetles and their host plants. We present these interactions based on the holobiont theory, i.e., considering bark beetles and their associated microbiota as a whole.

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Tamás KOLLÁR and Attila BOROVICS:

The updated methodological directives of data processing and maintainance of the Hungarian long term forestry experimental network, and its most important results

Abstract – The Hungarian long-term forestry experiment network was established in 1962, with the lead of Rezső Solymos, The Forest Research Institute has been running the network continuously since that time and its data are under research. The basic objectives of the network are unaltered since the establishment. The primary aim was to create a suitable basis for silvicultural and forest yield research in Hungary. The experiment plots take place in forest stands of common beech (*Fagus sylvatica*), sessile oak (*Quercus petraea*), Turkey oak (*Quercus cerris*), pedunculated oak (*Quercus robur*), hornbeam (*Carpinus betulus*), common ash (*Fraxinus excelsior*), Scots pine (*Pinus sylvestris*), black pine (*Pinus nigra*) and Norway spruce (*Picea abies*). More than 3000 plots, about 11000 survey reports (diameter, height, classification) are available, from which more than 6600 survey reports are digitally accessible. About 1200 plots are still monitored. The detailed methods of alignment, measurement and maintenance of the experimental plots and the most important publications of the long-term experiments are summarized. From these, the national forest yield tables and silvicultural treatment models are significant, but with the possession of new data, reformation is necessary.

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Ferenc SZMORAD, Kristóf KELEMEN, Kata KENDERES and Tibor STANDOVÁR:

Assessment of composition, structure and dead wood supply in forests of the North Hungarian Mountains, Hungary

Abstract – The main objective of our project entitled „Multi-purpose assessment serving biodiversity conservation in the Carpathians region of Hungary”, supported by the Swiss-Hungarian Cooperation Program, was to develop a new forest state description methodology and to apply it to survey nearly 50,000 hectares of forests in three regions (Börzsöny, Mátra, Aggtelek Karst) of the North Hungarian Mountains. The present study evaluates the composition and structure of tree canopy and deadwood supply based on data collected by systematic sampling, fine spatial resolution and by recording numerous variables. The results show the compositional and structural richness of the Aggtelek karst, the lack of admixing tree species and a better supply of standing dead wood in the Mátra, the higher variation in canopy closure in the Börzsöny. There is no significant difference between the regions in terms of lying dead wood, and invasive trees species (black locust, tree of heaven). Among the practical conclusions, the dependence of certain characteristics (admixing trees, dead wood) on management is emphasised, and related management proposals are made.

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Tamás Márton NÉMETH, Orsolya SZABÓ and Norbert MÓRICZ:

Comparative drought sensitivity analysis of young oak stands in Somogy County (Hungary)

Abstract – This paper analyses the drought induced growth responses of oak stands, Sessile oak (*Quercus petraea*) and Turkey oak (*Q. cerris*), along a precipitation gradient in Somogy County. 136 tree-ring samples were analysed and dendroecological metrics were also applied to assess the drought sensitivity of the species. Water deficit was estimated by using the soil water budget based water stress index. Results indicated a strong dependency of annual tree ring width on the water availability of current year summer but found different strategies of the two tree species against drought conditions. Turkey oak responded more sensitively to droughts than sessile oak revealed by the significantly lower resistance and higher recovery potential of this species. A linearly proportional increase of growth reduction with rising water stress was found for Turkey oak while the growth response of sessile oak decreased considerably with increasing aridity indicating lower growth plasticity of sessile oak to droughts there. Based on our findings it seems that Turkey oak copes better with droughts than sessile oak and may gain competitive advantages under the projected climate change.

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Tamás MOLNÁR, Zoltán SOMOGYI and Géza KIRÁLY:

Forest monitoring plan of Farkas-erdő of Sárvár based on Sentinel-2 satellite images and cloud computing

Abstract – The satellite based remote sensing forest monitoring system of Farkas-erdő of Sárvár was created to utilize high resolution ESA Sentinel-2 images and cloud computing, where processing, analysing, and displaying of health state changes of forests takes place online, in the Google Earth Engine. The system aims to monitor the forest health state change constantly with high precision in the investigation period of 2017-2020, using maps and graphs made of vegetation and moisture indices. Remotely sensed data was compared to field-based damage reports for validation purposes.

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