

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. 13, 2023) contains the following papers. The full papers can be found and downloaded in *pdf* format from the journal's webpage (www.erdtudkoz.hu).

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Béla Csaba EÖTVÖS, Anikó HIRKA, László GIMESI, Gábor LÖVEI, Csaba GÁSPÁR and György CSÓKA:

Estimation of spring caterpillar biomass in hungarian deciduous forests from long-term light trap data – what will the insectivorous bird nestlings eat? ...5–20

Abstract – Numerous recent studies report an alarming decrease in diversity, biomass, or abundance of arthropods in various habitats. Given that they are important food for other organisms, the ecological consequences of such a decline could be severe. We used data from the Hungarian Forestry Light Trap Network to examine whether the spring caterpillar biomass showed any long term (23-58 years) declining trend in oak-dominated forests. Light trap data for 43 selected macrolepidopteran species (suitable bird food in the larval stage) from six different locations were used for the estimation of the total available caterpillar biomass. Time series analyses showed strong year-to-year fluctuations, and over all locations and time windows there was an increasing rather than decreasing trend. The increase found at some locations may suggest increasing herbivore pressure and negative impacts on forest health. We conclude that foliage-feeding macrolepidopteran species with spring-developing larvae did not show a drastic decrease in recent decades. The estimated biomass increase of the caterpillars of some species may have a negative effect on forest health, but a positive effect on the nesting success of birds. This article is based on the original publication by Eötvös et al. 2021 (No Long-Term Decrease in Caterpillar Availability for Insectivorous Birds in Deciduous Forests in Hungary).

<https://dx.doi.org/10.17164/EK.2023.01>

Dominik DREDOR and Tünde SZMATONA-TÚRI:

A literature review of the hungarian mycorrhiza research and its results ...21–34

Abstract – Mycorrhiza is a symbiosis between the roots of plants and fungi, in which mutual nutrient transfer occurs. In forestry aspect, ectomycorrhiza is the most significant of its seven types of mycorrhiza, because the most of forest trees live in such root connections. In our work we review the Hungarian literature of mycorrhizal research of forest importance from the 19th century to the present. Several researchers have been examined the artificial grafting of fungi on trees and have positive results in almost all cases. Overall, artificial mycorrhization can greatly help the nutrient uptake and so the resistance and growth of trees. However, due to demand the high precision, professional and expensive work, it has not yet

become widespread in Hungary despite the good results. Due to the effects of climate change, forest mycorrhization may be important in the future, currently it is used only in truffle cultivation. In the future, mycorrhization may have a importance in the fight against climate change and in order to create more resistance forests.

<https://dx.doi.org/10.17164/EK.2023.02>

Fanni FODOR and Tamás MERTL:

The current state and potential of the common hornbeam (*Carpinus betulus* L.) in forestry and in wood industry ...35–53

Abstract – In present paper, an overview of common hornbeam was provided, which is a native wood species with many favorable characteristics and significant logging opportunities, however it is less utilized in the wood industry. Although its wood is not durable in natural form, it is one of the densest, hardest and most wear-resistant wood species in Europe. Due to its unfavorable properties, it is mostly used as firewood. Its areas of use indoors can be expanded with new utensils, interior panelling, and decorative elements. In addition, with various environmentally-friendly wood modification processes, a more durable and resistant wood material can be obtained, the color of which can be adjusted to the user's needs by varying the process parameters. This material can be used for outdoor wood products, but also for architectural applications. Hornbeam is stably available in Hungary in medium-term and can provide opportunity for the production of durable wood products, if there is a manufacturer and effective demand for it within the effective transportation distance. At the end of this article, the findings were summarized with a Strength-Weakness-Opportunity-Threat Analysis.

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Ferenc SZMORAD and Tibor STANDOVÁR:

Regional analysis of wild game effects on natural regeneration in the North Hungarian Mountains ...55–73

Abstract – This study investigates the relationship between wild ungulates impact and regeneration characteristics in three landscape units of the North Hungarian Mountains (Börzsöny, Mátra, Aggtelek Karst), covering an area of about 50 000 ha. The analyses, based on forest condition surveys of nearly 60 000 points, also cover forest areas not under active management and, in addition to the basic indicators used in forestry practice (cover, browsing), also address the extent of and causes for lack of regeneration. The results show the strong impact of ungulate species in all three landscape units, significantly reducing the viability and amount of regeneration. Heavy browsing was observed in 58.17-76.23% of the samples, while the proportion of samples with less than 1% cover was 46.59-54.23% in the low (0-0.5 m) and 61.31-83.91% in the high (0.5-2.5 m) regeneration. Nonparametric correlation analysis revealed a negative significant relationship between the amount of soil disturbance caused by wild game and regeneration cover. The reduction of wild ungulates impact is essential not only for successful regeneration in age-class forestry, but also for the expansion of continuous cover forestry and the long-term survival of forests not affected by timber production.

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Tamás KOLLÁR:

Forest yield function and table of turkey oak (*Quercus cerris*) stands by the fri's long duration research network database ...77–101

Abstract – Yield table of Turkey oak by the Forest Research Institute's long duration research network was publicised in 1974 by Gábor Hajdú, and later in 1983 by Ferenc Kovács. Since then, a great amount of data was accumulated from the University of Sopron – Forest Research Institute's (UOS – FRI) long duration forest yield and silvicultural research network by continuous recordings. From that database new yield functions and yield tables were made in favour of more accurate estimation of Turkey oak yield. 958 digitalised records from 343 parcels were processed, from that great differences were noticed compared to the previous tables. Besides making the traditional yield table, the methods of calculations were given in detail, from which a forest stand's individual growth trends can be calculated. The tables were made assuming a 100% Turkey oak mixture ratio, closure and density.

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Dániel SÉLLEI, Viktória TÓTH and Dániel WINKLER:

Study on springtail communities of dead wood microhabitats ...103–122

Abstract – Our study aimed to investigate the Collembola communities inhabiting dead wood-related microhabitats. The study was carried out in the old remnant floodplain forest (Csáfordi-forest, Northwest Hungary) owing to the massive amount of dead wood in its area. For the survey, we selected 11 microhabitats, including lying dead wood of different stages of decay, dendrotelmata, peeling moss and bark, decaying wood material taken from tree hollows etc. A total of 1309 Collembola individuals belonging to 40 species were collected, three of them (*Anurida granaria*, *Folsomia martynovae*, F. cf. *similis*) are new to the Hungarian fauna. The most diverse microhabitats were the lying dead trees in a more advanced stadium of decay. The family Entomobryidae represented the largest proportion of species (25%). The number of species varied between 1 and 21 in the microhabitats studied. The communities with higher species numbers were associated with lying dead wood, including dead wood at a more advanced stage of decay. Fewer species were found in the dry wood decay of the tree's base hole, while special microhabitats (detached bark of living trees, dendrotelmata) provided suitable habitats for only one or two species.

<https://dx.doi.org/10.17164/EK.2023.06>

Dénes HORVÁTH and Sándor FEHÉR:

Amount of lamellae derived from low-quality oak logs ...123–129

Abstract – The subject of this paper is the quantitative analysis of defect-free lamellae derived from low-quality logs. The noble oak logs included in the study were used to produce boards with a thickness of 30 mm, of which 50 pieces were analysed, representing the typical material quality that can be obtained from low-quality sawlogs. Based on image analysis, 18% of the surface area of these timber could be classified as class 1 lamellae. The remainder of the board surface area either contained some wood defects or the defect-free part was too small for lamella production. While the length of the majority of the lamellae was between 0.25 and 0.50 m, the width of the majority of the lamellae was in the middle category (50 mm). However, there has been little demand for these high quality lamellae on the market for

decades or they would be used for parquet production at very low prices. It would be advisable to find alternative uses for this significant quantity of material in the future, such as glued-laminated structural timber. This would increase the amount of wood used in industrial production and would allow the production of high added value products from a currently unused assortment.

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Béla Csaba EÖTVÖS, Máté TÓTH, Anikó HIRKA, Ágnes FÜRJES-MIKÓ, Csaba GÁSPÁR, Márton PAULIN, Ferenc LAKATOS and György CSÓKA:

Factors influencing the short-distance spread of oak lace bug [*Corythucha arcuata* Say, 1832)] in hungarian oak forests ...131–144

Abstract – The extremely high abundance of the oak lace bug in our oak forests can have significant impacts on the health, productivity, fecundity of oaks and the communities associated with oaks as well. Its long-distance spread is mainly facilitated by road and rail traffic, whereas it can spread shorter distances both actively and passively. Factors influencing its spread may include distance from the source of infestation, the degree of tree mixture or the prevailing wind direction. Specialist herbivores (particularly those searching food plant actively) tend to find their food plants more difficult in mixed forests, so their dispersal is slower and/or limited. Our results show that initially higher infestations occur along roadsides, from where the infestation penetrates into the forest. The mixed forests are not able to slow down significantly the invasion of *C. arcuata*, and the species is able to spread even in the opposite direction to the prevailing wind direction.

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