

Contents and Abstracts of the Bulletin of Forest Science

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Vol. 9, Nr. 1, 2019

Péter KOTTEK and Éva KIRÁLY:

Climate change can be detected in the national forestry database...7–18

Abstract – From 2006 to 2016 a noticeable change can be observed in the climatic classification of forest stands in the National Forestry Database (NFD). As the polygons of forest stands cannot be fully matched between the 2006 and 2016 state of the NFD, climate transitions were studied along a one hectare resolution sample grid. This sampling pattern allowed large scale comparison of climatic categories and the description of local changes occurred between the two periods (2006 state of NFD consists of field surveys between 1996 and 2005; 2016 state between 2005-2015 accordingly). The sample grid also facilitated the statistical evaluation. The results show that climate classification has changed in 5.4 percent of the forest area, and the distribution of climate categories in 2016 shows a statistically significant difference compared to the 2006 state. Accordingly, the concept of climate change is strongly supported by data of the official forest inventory. The speed of climate shifts may be considered fast and the direction is warning as changes are generally unfavourable. We also analysed the sampling grid nodes where the forest land use changed to another land use type between 2006 and 2016. We found that 44 percent of these sampling points were in the “forest steppe” climate category (the most arid one of the 4 possible classes). This shows that in forest stands under this climate category land use change is more likely to be undertaken. On the other hand the major part of newly afforested area is under “forest steppe” (37%) and “sessile oak – Turkey oak” (34%) climate which shows that new forests are planted under dry conditions.

Ferenc Péter ROZOVITS, Zsolt MAGYAR, Péter KOTTEK and Sándor BORDÁCS:

Modeling pollen capacity of forest areas based on tree species and pollen data ...19–33

Abstract – Model maps were constructed for estimating pollen capacity of Hungarian forests, based on meteorological pollen monitoring and forestry database information. Model maps are continuously updated and directly linked to the National Forest Database (NÉBIH

Forestry Directorate) which are publicly available at NÉBIH website (URL 4). Based on the model maps the flowering period of tree species can be forecasted in different region of Hungary. Data and information of the model maps can be used for annual seed crop prognoses and indirectly for planning of forest regenerations and silvicultural works. Model maps also provide an opportunity for more conscious planning of bee keeping and preparation of public health measures taken for pollen sensitivity.

Ágnes FÜRJES-MIKÓ, Sándor CSÖSZ and György CSÓKA:

Role of red wood ants (*Formica rufa* group) in forest protection in Europe – a literature review ...35–50

Abstract – Red wood ants are generalist predators. They prey on many insect groups, so may significantly influence their abundance. Species in *Formica rufa* group obtain their food mainly from tree canopies, so they can effectively reduce the herbivore pressure. European literature gives wide ranges for their food spectra. Based on investigations, almost half of their food consists of insects, including species considered “forest pests”. Honeydew of different Hemiptera species also plays an important role in their nutrition. The ant-aphid mutualistic relationship and its impacts on the health of trees and forests have been discussed for a long time. The ants may also have a positive effect on soil since their nest material contains concentrated minerals bound to organic materials. The trees near the nests can utilize these organic nutrients that can result in accelerated growth. In this paper we review the related Hungarian and European literature.

Szabolcs SZANYI, Attila MOLNÁR, Lajos KOZÁK, Tímea SZALÁRDI, Zoltán VARGA, Miklós TÓTH and Antal NAGY:

Study on the Macroheterocera assemblages of the Nyírség (Northeast Hungary) using volatile traps...51–68

Abstract – The unique biota of the Nyírség region is known mainly on basis of its flora, however, its fauna is poorly studied especially in case of insects, for the Lepidoptera fauna we have only more than 20-years old data collected by light traps. In 2014 and 2015 we carried out samplings with volatile traps near Debrecen-Nagycsere, in the southern part of the Nyírség. We attempted to compare comparing the efficiency and selectivity of phenylacetaldehyde based (FLORAL) and isoamyl-alcohol based (FERM) lures, and to collect faunistical data from the region. During the two-years long study we caught 226 Macroheterocera species belonging to 7 families. Considering the number of caught species the FERM bait was more effective and the different selectivity of the lures was also proven. We characterised the studied fauna on the basis of their composition and ratios of faunal types and faunal components.

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Tivadar BALTAZÁR, Ildikó VARGA and Miloš PEJCHAL:

Investigation of relationship between dendrometric variables of infected host trees by European mistletoe (*Viscum album* L.) with dependence of infection intensity...69–85

Abstract – The aim of our study was modeling the relationship between the tree height and diameter at breast height (DBH) with dependence of host taxa and mistletoe infection intensity. Ten woody species have been selected for this study from 5 genera (*Acer*,

Crataegus, *Juglans*, *Robinia* and *Tilia*) representing more than 3,000 individuals whereof about 1400 are already infected. The examined host taxa can be found in the castle park of Lednice in Czech Republic. The park is in the centers of the mistletoe distribution in this region. Logarithmic regression was chosen characterizing this relationship because these two dendrometric variables relatively accurately and simply. From the obtained result, it can be clearly established that as the infection intensity increases, the relationship between the height and DBH decreases proportionally. The difference was also statistically significant for several other host species. However, the exact modelling of this relationship is more complicated, because the negative effect of mistletoe may differ within host species too.

András SZABÓ, Zoltán GRIBOVSZKI, Bence BOLLA, Kitti BALOG, Péter CSÁFORDI and Tibor TÓTH:

Effect of *Robinia pseudoacacia*, *Populus x. euramericana* and *Quercus robur* plantations on groundwater and iontransport at the northern Hungarian Plain...87–97

Abstract – The role of forests in hydrological processes on the Great Hungarian Plain is still a subject of debate. Among the causes there are numerous and highly variable local factors taking part in the processes. This research investigated the impact of forests on groundwater levels and ion transport of the soil since 2012 on 108 study sites, using one-time soil sampling, forest stand measurements and groundwater monitoring. Results in general supported the assumptions of the hypothesis in correlation with groundwater depression and ionaccumulation under forest stands. Meanwhile the same results highlighted that different water-uptake strategies of different tree species and other local factors (topography, soil texture) highly influenced the processes. Consequently it is not correct to evaluate the impact of forest stands exclusively by their increased evapotranspiration. For this purpose complex approach is necessary in which groundwater monitoring and investigation of ion transport also could be used as useful instruments.

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

Pitfall trapping arachnological survey in the Szalafő Forest Reserve...99–112

Abstract – During our research, we surveyed the ground-dwelling spider fauna of the Szalafő Forest Reserve (ER-53, Hungary) by pitfall trapping. The research was conducted in 2014 from April to October. We collected data from three different habitats: mixed deciduous stand, mixed deciduous stand with Scots pine (both in the core area), and mixed Norway spruce stand in the protective zone. Our goals were to assess the ground-dwelling spider assemblages of the habitats, compare their spider fauna regarding species composition, diversity indices and guild structures. We determined that the two deciduous forest patch had the most similar ground-dwelling spider assemblages, while the communities of the spruce stands were somewhat different.

Zoltán BÖRCSÖK, Péter ADAMIK and Zoltán PÁSZTORY:

Review of the possibilities of bark utilization...113–138

Abstract – Approximately 300-400 million cubic meters of bark are produced each year during wood processing. Most of this, however, remains unused or burned. The structure and composition of the bark are special, and differs from the wood, which features a number of utilization possibilities. Agriculture, power engineering, medicine, woodpanel industry, insulation and chemical industry can successfully use and utilise the bark of different trees.

This study provides an overview of the structure, properties, and utilization potential of the bark.

Péter PRIMUSZ, Péter KALICZ, Balázs KISFALUDI and József PÉTERFALVI:

Determining the bearing capacity of lime-treated soils by the CBR method...139–157

Abstract – In this research a set of tests were performed to determine the effect of lime addition and water content on the bearing capacity of cohesive soils. The bearing capacity was measured by the CBR method. Four types of soils were included in the research. Soil samples were prepared from each type by 6 different water content, 4 dosage of lime addition and 3 duration of curing time. It was found, that each soil is suitable for the construction of lime-stabilized pavement layers. As a result of the lime treatment the bearing capacity of each soil was increased. Repeated CBR tests were performed on the treated and untreated soil samples after 4 days of soaking. It was confirmed that the water-sensibility of the treated soils decreased significantly. A regression tree model was applied to create practice-oriented rules for predicting the bearing capacity. Our results support the idea that the bearing capacity of lime-stabilized soil layers can be counted in the total bearing capacity of forestry and agricultural road's pavement.

