

Contents and Abstracts of the Bulletin of Forest Science

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János Attila TÓTH:

40 years in a forest ecological research: the Síkfőkút project ... 7–19

Abstract – The Síkfőkút Project site was established in 1972 by Pál Jakucs as part of the Man and the Biosphere (MAB) program for long term ecological research in a typical Hungarian climazonal sessile oak - turkey oak forest. For the 40 year jubilee, this paper gives a summary and overview about its establishment, goals, facilities, results, international connections, and silvicultural importance.

Sándor BORDÁCS, László NAGY, Beáta PINTÉR, István BACH, Attila BOROVICS, Péter KOTTEK, András SZEPESI, Zoltán FEKETE, Károly WISNOVSZKY and Csaba MÁTYÁS:

State of Hungary's forest genetic resources, 2010-2011 ... 21–37

Abstract – The Food and Agriculture Organization of the United Nations (FAO) Commission on Genetic Resources for Food and Agriculture published their first reports on the state of plant and animal genetic resources in 1996 and 2007, respectively. The third such report, The State of World's Forest Genetic Resources, is scheduled for publication in 2013. Although Hungary takes part in monitoring of conservation activities on forest genetic resources at international context, the country report for the above mentioned initiative was the first comprehensive assessment of management and conservation issues in the last decades. This paper gives a short summary of the country report, concentrating primarily on the domestic forest gene conservation strategy, measures and activities, its legislation, financial background and international aspects. Additionally, overview on the present state of genetic investigations, breeding and forest reproductive material production, marketing and deployment, based on data from 2010-11, is also included.

Bálint CZÚCZ, László GÁLHIDY and Csaba MÁTYÁS:

Present and forecasted distribution of beech and sessile oak at the xeric climatic limits in Central Europe ... 39–53

Abstract – In order to project the effects of expected climatic changes, distribution of European beech (*Fagus sylvatica*) and sessile oak (*Quercus petraea*) were analysed at the xeric limits in Hungary. A fine-scale analysis was combined with sophisticated screening for

climate-dependent (zonal) occurrences. For both species, temperature and precipitation conditions in late spring and summer appear as principal variables determining the probability of presence. For beech, the importance of Ellenberg's climate quotient supports its sensitivity to summer drought. The calculated range shifts are drastic, similar to other results of statistic models. The applied approach allows a finer distinction of climatic threats on local scale and draws the attention to the urgency of preparative measures and application of proper silvicultural technologies.

Bence KOVÁCS, Kristóf KELEMEN, János RUFF and Tibor STANDOVÁR :

Experience of large-scale conversion from even-aged to continuous cover forestry by gap-cutting in the Királyrét forest directorate ... 55–70

Abstract – A transition system to continuous cover forestry has been introduced at large scale (over 5,000 hectares) by Királyrét Directorate of the Ipoly Erdő Ltd. Due to the short time period since the start of the transition in 2007, the processes including natural regeneration are not well known. Of the 6,000 gaps created, we included 124 using stratified sampling by stand age, dominant tree species and time since gap opening. Position and size of the gaps as well as cutting damage were noted. Sapling cover and browsing damage were estimated for each tree species in three size categories.

Two thirds of the gaps exceeded the diameter of stand height and more than half of them have an oblong shape. Forestry operations caused stem damage in 51% of the gaps and saplings were harmed in 21 cases. During the sampling 23 tree species were registered 30% of which did not occur in the adjacent stand. Sapling cover was highest in the 20-150 cm size category reaching 3% for the dominant and 9% for the admixing tree species. Game pressure was high and affected especially saplings between 20-150 cm, sprouts and admixing tree species.

Tamás KOLLÁR:

Determining gap size with the aid of hemispherical photography ... 71–78

Abstract – One of the greatest challenge of the continuous cover forest management is to choose a suitable gap size in a given forest stand that will help the regeneration of economically significant woody species, but possibly control the competitors of the cutting site and undesired woody species, hereby reduce the necessity of nursing. The hemispherical photos (or fish-eye photos) taken of the gaps in the survey are about to reveal, that how little information is obtained from a simply measured gap size when determining the light conditions of a gap. From the findings, it can be suggested to forest researchers who are working with the transformation system that they take simple fish-eye photos alongside the estimation of ground level gap size, from which accurate canopy closure and real light conditions can be evaluated.

Katalin Anita Zagyvainé Kiss, Péter Kalicz and Zoltán Gribovszki:

Dry weight dependence of water capacity of the forest litter ... 79–88

Abstract – One station of the forest water cycle is the forest litter, which can retain more water from the precipitation than its own dry weight. This study examined the litter water storage depending on the dry weight for three species (spruce, beech, sessile oak). The results obtained with the method of collecting litter showed that the leaves can be uptaken by the maximum amount of water depends on especially the dry weight of the litter. According to our measurement the maximum water content of the litter per kilogram dry weight is 2.1-2.2 litres.

Károly RÉDEI, Imre CSIHA, Zsolt KESERŰ, János RÁSÓ and Ágnes KAMANDINÉ VÉGH

Evaluation of juvenile micropropagated black locust (*Robinia pseudoacacia* L.) clones under sandy soil conditions ... 89–95

Abstract – In Hungary the black locust (*Robinia pseudoacacia*) is one of the most important exotic stand-forming tree species. Its importance is increasing in many other countries, too. As a result of a partly new selection programme eight black locust clones have been improved for setting up clone trials and seed orchards. In the paper the juvenile growth and the stem quality of micropropagated black locust clones were evaluated under sandy soil conditions. At age of 10 the clones 'MB17D3/4', 'MB17D3/10' as well as 'PV 201E2/4' appeared to be the most promising ones for quality wood production. Tissue culture method can be considered as a suitable tool for clonal propagating superior individuals and offering new prospects for rapid mass cloning of selected genotypes.

Attila László HORVÁTH, Katalin SZAKÁLOSNE MÁTYÁS and Béla HORVÁTH:

Harvesting in hardwood stands with application of multi-operational logging machines ... 97–110

Abstract – As a result of new developments in technology, harvesters may no longer be confined to conifer forests only. Several studies carried out in black locust, Turkey oak and beech stands have justified the use of these machines in hardwood stands. Evaluating the results of the cost and time analyses we concluded that harvesters are more efficient in several cases compared to traditional wood cutting with chainsaws.

Péter CSÉPÁNYI:

Economic analysis of the continuous cover forest management in beech stands in comparison to the traditional rotation system ... 111–124

Abstract – This paper discusses the analysis of the complex economic models between selection system based on "Dauerwald" principles (continuous cover forestry) in the early transformation period and in the traditional rotation system in beech stands. The analysis is carried out both subcompartment level and forest blocks (management) level and compares the performances. From the results obtained it can be found, that in beech stands in the selection system is able to reach at least the same economic efficiency in both levels such as in the traditional rotation system.

György MAROSI, Márton DAUNER and István JUHÁSZ:

Annuity of state owned forests as a basis for trusteeship fee ... 125–135

Abstract – The most important requirement for forestry units managing state owned forests is to carry out sustainable forest management. Among the many criteria of sustainable forest management the maintenance of a stable financial background is essential. Providing the financial background is almost solely based upon the incomes generated from marketable forest based products and services, of which timber is predominant. Studying the potential incomes from timber is therefore of high importance for both the representative of the state as the owner and the forest management units. This income can be considered as the basis of calculating the trusteeship fee. This paper presents an applicable method to calculate long term profitability of forest management.

Viktória CSANÁDY:

A new function for analysis of datasets ... 137–145

Abstract – In this paper, we suggest a model of fitting a new type of saturation curve, namely a sinus curve, which can extend the application of saturation curves and life curves for forest yield database. The greatest advantage of the model is its flexibility can be realized in fitting either with or without inflection point. The initial values can easily be given for the regression procedure implemented in computer. The output of the programme consists of five parameters. Beside the usual graphical illustration the algorithm makes possible to show the differences between, for instance, black locust-tree production sites by exact calculation.

Gergely KIRÁLY, Bohumil TRÁVNÍČEK and Vojtěch ŽÍLA:

Modern rubus taxonomy ... 147–156

Abstract – The genus *Rubus* L. with over 700 European species belongs to the taxonomically most complicated groups of vascular plants. The representatives of the genus form a complex of few sexual diploid species and a plenty of polyploid apomicts. New morphotypes originated as result of occasional hybridization and segregation can be stabilized by renewed apomixis. Botological research was suffered from methodological and taxonomical inaccuracies for a long time, with the description of innumerable individual morphotypes, which were mainly resolved by the new, modern species concept developed in the last 40 years (“Weberian reform”). A scale of distribution extents was established and widely accepted for taxonomic classification, and only uniform morphotypes with sufficiently large distribution areas have been classified as species. The authors give an overview on development of taxonomical concepts and special methods of modern *Rubus* research beside a short summary of former and recent batological activity in Hungary.

Péter SZÜCS and András BIDLÓ:

Comparison of bryophyte communities in Norway spruce (*Picea abies*) and beech (*Fagus sylvatica*) forest stands in sopron mountains (nw-hungary) ... 157–166

Abstract – Coverage, richness and composition of bryophytes were compared between spruce and beech forest stands in the Sopron mountains. The highest coverage of bryophytes species in beech forests had *Hypnum cupressiforme*, which was followed by terricolous species like *Atrichum undulatum* and *Dicranella heteromalla*. The most dominant species in the spruce stands was *Brachythecium velutinum*; *Brachythecium rutabulum* and *Fissidens taxifolius* had slightly lower cover. The cover of bryophytes in beech stands was twice as high as in spruce stands. The total bryophyte coverage was very small in both forest types. The proportion of stands without bryophytes was the same in beech and spruce forest stands. Greater richness of bryophyte was found in beech stands than in spruce stands. The most frequent species were *Hypnum cupressiforme* and *Brachythecium velutinum* in both forest stands. The bryophyte flora was richer in native beech forests, than in spruce stands, which were planted on natural beech forests sites. However, the bryophyte composition of beech and spruce stands show considerable similarity. Generally, the older spruce plantations had unfavorable effect on the bryophyte diversity.

Tivadar BALTAZÁR, Ildikó VARGA, Miloš PEJCHAL and Péter POCZAI:

The distribution and host plant range of European mistletoe (*Viscum album*) in some Central European countries ... 167–177

Abstract – Our research focused on the distribution of European mistletoe (*Viscum album*) in five Central European countries (Hungary, Slovakia, Czech Republic, Poland and Romania). Regarding to the distribution of mistletoe in the different countries no accurate assessment have been made yet, therefore our review was based on the assessment of available literature records. The host plants of mistletoe are very different in the analyzed countries. It's notable, that many species from the broadleaf trees, such as *Acer pseudoplatanus*, *Robinia pseudoacacia*, *Populus × euramericana*, *Sorbus aucuparia*, or from conifers the silver fir (*Abies alba*) are the most common hosts almost all countries.

Ádám FOLCZ, Zoltán BÖRCSÖK, Bálint DIMA and Norbert FRANK:

Macrofungi (basidiomycota) investigations in the Sopron mountains (Western Hungary) from forestry point of view ... 179–194

Abstract – Mycology is a rapidly developing discipline, which has strong connections to the forestry management. To discover these relationships, mycological investigation was carried out in the Sopron Mts (Western Hungary). The monitoring was started in 2010, and it has not been ended so far. Different sampling methods were applied (e.g. random field work, small and large sampling plots) in the past three fruiting periods of macrofungi to understand their applicability. Altogether 364 taxa were documented. Based on our preliminary results, the Sopron Mts is a species rich, diverse area from mycological point of view. Ecologically as well as economically, macrofungi play important role in the life of the forests and forestry managements (e.g. indicator function, nature conservation, health condition, decay of litter and dead wood, secondary source of income, etc.), and their knowledge has several future possibilities in practical use.

Dániel ANDRÉSI

Ecological investigation of bird communities in the Tanulmányi forest of Ásotthalom ... 195–204

Abstract – In two consecutive years (2011 and 2012), the bird communities of two pine plantations, two pedunculate oak and one gray poplar stands were studied in the Tanulmányi Forest of Ásotthalom. For the survey the quadrat method was used. Altogether 735 individuals of 34 bird species were detected. The surveyed biocoenoses were compared with various ecological parameters (diversity, the level of consistency, similarity measures and hierarchical cluster analysis based on Jaccard). In the two study years, species richness, density and diversity were the highest in the oak stands. The highest similarity was between the two oak sites while it was the lowest between the pine and the oak sites. In the dendrogram of the hierarchical cluster analysis the deciduous and the coniferous quadrates are well separated. At each level the breeding bird occurrence was constant for the terricol and the fruticicol species. The ratio of the dendricol and the arborical species was higher in the oak sites.

Dániel András Winkler, Tamás Márton Németh and György Nándor Traser:

Comparative study of collembolan communities in different forest types of Finland ... 205–214

Abstract – The Collembola fauna was studied in the region of Ähtäri (Western Finland) in five different habitats (coniferous, deciduous and mixed forests). During the survey a total of 2007 specimens belonging to 32 species were collected. The most abundant species was *Folsomia fimetarioides* occurring in high numbers in all sampled habitats. Species richness and diversity were the highest in the pine forest, while total abundance peaked in the soil samples of the birch forest. Despite of the different plant composition of the sampled forests, community similarity (Bray-Curtis) was relatively high (41%<).

Szabolcs VARGA and Miklós MOLNÁR:

The maybeetle and the forest cockchafer in Hungary, and possibilities for protection against the species ... 215–227

Abstract – Two species of the family Melolonthidae have particular importance in forest management in Hungary; the maybeetle (*Melolontha melolontha*) and the forest cockchafer (*Melolontha hippocastani*). Present knowledge about the two species are presented in details in this article. Earlier experiences with decreasing their damage as well as newer technological experiments are evaluated on the basis of Hungarian literature.

Bálint HORVÁTH:

Comparing diversity of nocturnal macrolepidoptera communities (Lepidoptera: Macroheterocera) in different forest stands using light traps ... 229–237

Abstract – Macrolepidoptera communities and their diversity was compared in three different forest stands (sessile oak, beech and mixed sessile oak forests) in the Sopron Mountains. The monitoring was carried out from May to November 2008, using portable light traps and we identified a total of 349 species and 8,046 individuals in 12 families. The results suggest that the mixed forest stand has higher diversity of macrolepidoptera species. The diversity was determined using Shannon and Simpson diversity models. To compare diversity values, Hutcheson's t-test was used. Furthermore, the diversity values were ranked by Rényi's diversity ordering. The results show higher diversity in the mixed oak forest stand, while the beech forest stand had lower diversity of macromoth communities. Ranking of the unmixed oak forest stand was not possible.

Edit PINTÉRNÉ NAGY:

Effect of various sources of light on insects trapped with Jermy-type light traps ... 239–249

Abstract – The light-trap method is based on the insects's behaviour to fly to artificial light, therefore it can also be used to examine light pollution. Light pollution can lead to change in insect behaviour and reproduction. The aim of this study was to examine the effect of light pollution on insect behaviour using three different type of light sources. The investigation was done with Jermy-type light traps from June to August, and the tests were done according to the moon phases. The trap captures varied strongly. Flies (*Diptera*), cicadas (*Hemiptera*) and moths (*Lepidoptera*) were eudominant and dominant in the traps. There is a regionally varied, significant relation between the light sources and trapped insect orders.

Levente SZŐCS, George MELIKA and György CSÓKA:

Data on the parasitoid complexes of leaf mining insects on oaks ... 251–259

Abstract – Leaf miners are good models to study multitrophic interactions, including the regulating potential of their parasitoids. Only a few studies have been published concerning the parasitoids of the Central European and Hungarian leaf miners. In 2011 and 2012 we studied the parasitoid complexes of 9 leaf mining species developing on 4 different species of oaks. The samples were kept in individual rearings. In the two years we collected 1,936 samples. From these rearings 28 different parasitoid species have emerged. After comparing our rearing results with those in the scientific literature, we have concluded that our results include novel and unpublished host-parasitoid associations.

András NÁHLIK, Gyula SÁNDOR and Tamás TARI:

Birth rate and offspring survival in a free-ranging wild boar (*Sus scrofa*) population ... 261–269

Abstract – We have estimated birth rate in wild boar *Sus scrofa* by counting embryos in the uterus of females killed in the course of individual or drive hunts. Counting corpora lutea in the ovaries gave information, on embryo/corpus luteum rate, which can be useful for estimating birth rate in early stages of pregnancy. In the latter cases we multiplied the number of corpus luteum by the embryo/corpus luteum rate to estimate the birth rate. Birth rate was estimated in different age groups, separately. Age was estimated by means of teeth wear. Survival was estimated by direct observations counting the piglet/female ratio in matrilineal groups. The method is suitable for assessing summer survival only, as 8-9 month after birth matrilineal groups begin to disintegrate. Average estimated birth rate was 6.7 (N=51). We found positive linear relationship between conception rate and age of female, conception rate and body mass, respectively. In late stages of pregnancy, embryo/corpus luteum rate proved to be 0.83 ± 0.15 . Recruitment of piglets to the female population was low: more than half of them perished by the end of September. The highest mortality rate occurred in the first weeks of the piglets' lives.

