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Evaluation of concentrations of bivalent and univalent alkaline cations in water of the Nature Reserve Žitavský luh – wetland

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Abstract

BEŇAČKOVÁ, J., NOSKOVIČ, J. 2006. Evaluation of concentrations of bivalent and univalent alkaline cations in water of the Nature reserve Žitavský luh – wetland. *Folia oecol*, 33: 1–9.

We evaluated concentrations of bivalent and univalent alkaline cations in the water of the Nature Reserve (NR) Žitavský luh, wetland over the years 2003–2005. According to the results obtained, we can state that the amounts of alkaline cations in water of the wetland followed the ordering: $Ca^{2+} > Mg^{2+} > Na^{+} > K^{+}$. The mean share of calcium on the total sum of alkaline cations for the whole monitored period was 52.03%, magnesium 21.02%, sodium 19.83% and potassium 7.13%. Over the whole monitoring period, the ratio of Ca^{2+}/Mg^{2+} was 2.48/1 and the ratio of Na^{+}/K^{+} was 2.78/1. Over the whole monitoring period, there have not been discerned any trends in seasonal dynamics in concentrations of the alkaline cations or their dependence on the sampling site. We calculated characteristic values of concentration of calcium and also magnesium, and compared these with the limit values given by STN 75 7221 "Classification of the water surface quality". The result was classification of water in all the sampling sites as belonging to the 2nd class of water surface quality (clean water). As no sources of anthropogenic pollution with calcium and magnesium were present in the river basin of the Žitava River, we can conclude that their presence in the wetland water is of natural origin – resulting from the nature of the parent rock in the monitoring area, mostly consisting of calcium loess and from soil genealogy – controlled by presence of basic cations in the surrounding soils.

Key words

wetland, surface water quality, concentration of alkaline cations

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Occurrence of *Puccinia xanthii* Schw. on cockleburs in Hungary

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Abstract

Dávid, I. 2006. Occurrence of *Puccinia xanthii* Schw. on cockleburs in Hungary. In *Folia oecol*., 33: 10–12 .

Puccinia xanthii Schw., a widespread rust on cocklebur species, is possible be used as a biological agent in control of these weeds. There have been, however, some reports about certain hybrids of sunflower infected with this rust from several parts of the world. This rust was observed for the first time on the Italian cocklebur in Hungary in 2002. Since then, infections of cockleburs occurred yearly in advanced growing season. *P. xanthii* has not yet infected any of 15 hybrids of sunflower grown in Hungary, either in a field experiment or in the greenhouse. *Ambrosia artemisiifolia* grown together with infected cockleburs have not developed symptoms of presence of *P. xanthii* under field conditions since the first occurrence of the rust in Hungary. Although the rust can infect cockleburs even at their cotyledonous stage, natural infections start in the second part of the growing season, so the role of *P. xanthii* seems to be without significance in biological control of cocklebur species in Hungary at present.

Key words

Puccinia xanthii, *Ambrosia artemisiifolia*, cocklebur spp., biological control

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Structure, production and regeneration processes in the primeval oak forest in the National Nature Reserve Boky

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Abstract

Halamová, M., Saniga, M. 2006. Structure, production and regeneration processes in the oak primeval forest in the National Nature Reserve Boky. *Folia oecol*., 33: 13–26.

The National Nature Reserve Boky near Budča (district Zvolen) is an extraordinarily precious and important object of studies, equally from the viewpoint of natural sciences as well as for nature protection. The aim of this study was to examine the structure, production and regeneration abilities of the primeval mixed deciduous forest at the site in 2004 and to compare the actual values with the corresponding values obtained in 1994. We focussed our investigation on the forest type Corneto-Quercetum. In the examined biocoenosis, *Quercus pubescens* is not present, it is substituted by its ecological equivalent *Quercus cerris*, growing here at the northen boundary of its distribution range. We measured selected dendrometrical biometrical variables on the trees (thicker than 2 cm) on three permanent research plots established in the Reserve. The evaluation revealed that there is a rather high variability in the total number of trees and timber volume, (in 1994 the number of trees in separate stages ranged between 747 and 924, and in 2004 between 614 and 1,000 per ha). *Quercus petraea* was the most abundant species in all permanent research plots (PRP). In case of large timber (stemwood), the share of winter oak ranged between 4%–71% and between 35%–65% in 1994 and in 2004, respectively and the share of *Quercus cerris* between 16% and 27% and between 13% and 24%. The diameter interval was found the widest for the advanced phase of disintegration stage turning into the initial phase of ingrowth stage on PRP 3. The smallest variation interval was obtained for PRP 1 – the optimum stage. According to the volume of large timber, the average standing volume ranged between 340–470 m^3 and between 322–330 m^3 per ha in 1994 and in 2004, respectively. Tree regeneration processes running in this primeval forest are different, on the background of differences in their ecological tolerance to light corresponding to the individual developmental stages. The best conditions for growth of *Quercus cerris* and *Quercus petraea* seedlings were observed till the end of the optimum stage.

Key words

NNR Boky, *Quercus cerris*, primeval forest, structure, production, regeneration

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Leaf spot disease on lindens caused by the fungi *Cercospora microsora* Sacc. and *Gloeosporium tiliae* Oudem.

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Abstract

Ivanová, H., Bernadovičová, S. 2006. Leaf spot disease on lindens caused by the fungi *Cercospora microsora* Sacc. and *Gloeosporium tiliae* Oudem. *Folia oecol*., 33: 27–36.

Certain of the growth characteristics of *Cercospora microsora* Sacc. and *Gloeosporium tiliae* Oudem. – causal agents of leaf spot diseases on lindens (*Tilia cordata* Mill.) in urban plantings in Slovakia were studied under laboratory conditions. Myceliar growth of *C. microsora* and *G. tiliae* was observed in pure hyphal cultures in relation to the medium and locality. In *Cercospora* study, one-way ANOVA has generally confirmed a statistically significant influence of both factors, medium and locality on growth rate of *C. microsora*, but in the case of the locality Nitra, the significant influence of the used media has not proved ($p > 0.05$). PDAg was generally shown as a medium inducing the most intensive growth in both localities (43.04 mm/4 days on average). Comparing the two localities, growth rate values from the locality Bratislava indicate unsuitability of water agar as a medium for the fast growth in culture. In *Gloeosporium* study, one-way ANOVA confirmed a significant influence of the factor medium as well as the locality on growth rate of *G. tiliae*. Influence of the used media was proven more markedly. Malt agar induced the most intensive growth in both localities (46.05 mm/4 days on average). Comparing the two localities, the samples from the locality Nitra showed in average the highest values of the growth rate. A Tukey test (ANOVA) separately conducted for the factors medium and the locality for both investigated fungal species, revealed the significant combinations of means ($p \leq 0.05$).

Key words

Cercospora microsora, Gloeosporium tiliae, growth rate, leaf spot, *Tilia cordata*

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The first record of *Cryphonectria parasitica* in the East Slovakia subregion

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Abstract

Juhásová, G., Kobza, M., Adamčíková, K., Maxim, L., Radócz, L. 2006. The first record of *Cryphonectria parasitica* in the East Slovakia subregion. *Folia oecol*., 33: 37–40.

This study is reporting about the first record of a subpopulation of the chestnut blight fungus in the East Slovakia. Occurrence of the fungus *Cryphonectria parasitica* was found in the Petrovce village, district Sobrance. The fungus was successfully isolated from 11 samples. Based on the culture phenotype, all isolates were considered to be virulent. No hypovirulent strains were found. Each isolate was unambiguously assigned to a simple vc type. According to the European nomenclature, the vc type detected in Petrovce is EU 12. Hypovirulent isolates were prepared for biological control of chestnut blight in Petrovce.

Key words

chestnut blight, *Cryphonectria parasitica*, *Castanea sativa*, vc types

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The influence of different vegetation on soil chemical properties in Arboretum Mlyňany

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Abstract

Szombathová, N., Labudová, S., Labuda, R., Konôpková, J. 2006. The influence of different vegetation on soil chemical properties in Arboretum Mlyňany. *Folia oecol*., 33: 41–47.

Differences in some chemical properties of soil under oak *Quercus cerris* (L.), cherry laurel *Prunus lauroerasus* (L.), and yew *Taxus baccata* (L.) woody plants in Arboretum Mlyňany were studied. Originally, oak-hornbeam forest was naturally present on studied area therefore soil under oak woods was taken as control variant. Obtained results showed, that changed type of vegetation distinctly influenced soil chemical characteristics. Studied profiles significantly (P = 0.01–0.05) differed in phosphorus and potassium contents, in pH H_2O and hydrolytic acidity. Profiles differed highly significantly (P = 0.01–0.001) in percentage of hot water soluble (C_{hws}) and oxidisable (C_L) carbon of C_T, sorption capacity and pH KCl values. The highest contents of potassium and phosphorus were found in A horizon under each studied woods. We suppose that mentioned macronutrients come from decomposed litter. Significantly (P < 0.001) the highest organic carbon content (C_T) was found in A horizon under cherry laurel wood (C_T = 26.51 g kg^{-1}), under oak (C_T = 22.63 g kg^{-1}), and under yew wood it was 20.71 g kg^{-1}. Type of vegetation influenced also humus quality. Low humus quality (ratio HA/FA) confirmed, that mainly under yew and oak was high amount of aggressive fulvic acids.

Key words

forest, pH, organic carbon, oak, cherry laurel, yew

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Leaf area index (LAI), climatic conditions and aboveground biomass production in stands of red oak (*Quercus rubra* L.) and black walnut (*Juglans nigra* L.)

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Abstract

Tokár F., 2006. Leaf area index (LAI), climatic conditions and aboveground biomass production in stands of red oak (*Quercus rubra* L.) and black walnut (*Juglans nigra* L.). *Folia oecol*., 33: 48–56.

In this paper we present evaluation of development of leaf area index (LAI) and aboveground biomass production in connection to climatic contitions in the stands of red oak (*Quercus rubra* L.) and black walnut (*Juglans nigra* L.) growing on the PRP series in Ivanka pri Nitre (Forestry administration Nitra, Forest enterprise Palárikovo). Over the whole developmental cycle, the highest LAI values were observed in the mixed stand consisting of black walnut and small-leaved linden. As for the aboveground biomass production, the best results were obtained in red oak monoculture, and at advanced age also in mixed stand of red oak and black walnut not subjected to tending (control PRP). In connection to climatic conditions, the highest values of mean periodical increment per leaf unit area (g dm^{-2} $year^{-1}$) were reached in 1994–1998 and in 1999–2003, in all types of the stands. The absolute maximum (42.90 g dm^{-2} $year^{-1}1$) was reached in 1994–1998 in the improved mixed stand of red oak (20%) and black walnut (80%).

Key words

aboveground biomass, LAI, climatic conditions, *Quercus rubra* L., *Juglans nigra* L.

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Rhizome regeneration of *Fallopia japonica* (Japanese knotweed) (Houtt.) Ronse Decr. I. Regeneration rate and size of regenerated plants

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Abstract

Sásik, R., Eliáš jnr, P. 2006. Rhizome regeneration of *Fallopia japonica* (Japanese knotweed) (Houtt.) Ronse Decr. I. Regeneration rate and size of regenerated plants. *Folia oeco*l, 33: 57–63.

Japanese knotweed, *Fallopia japonica* (Houtt.) Ronse Decr. comes from submeriodional and oceanic areas of Eastern Asia. The material for our research was sampled from a Japanese knotweed stand situated on a SW oriented slope by a main road, under a line of family houses in construction. The part of the stand adjacent to the road was regularly mown by the Technical Services of the Banská Štiavnica town. The stand was 5 x 3 m in size. The experiment was running over two growing seasons: 2002 and 2003. The study material consisted of 30 rhizome segments with three different lengths (2 cm, 5 cm, 8 cm). The plants had been regenerated in the following proportions: 90% exemplars of 8 cm segments, 63% of 5 cm segments and 60% of 2 cm resulted in new plants towards the end of experiment No 1. Experiment No. 2 gave rather different results: by 70% regenerated exemplars in case of 8 cm and 2 cm segments, 67% in case of 5 cm segments. The reasons of these differences are explained in the discussion. The growth dynamics and final size of the regenerated plants were dependent on the segment length.

Key words

Fallopia japonica (Houtt.) Ronse Decr., vegetative regeneration, rhizome segments, invasive species

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Woody plants and stands in the health-resort park Brusno, evaluated for quality and quantity

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Abstract

Feriancová, Ľ., Štěpánková, R. 2006. Woody plants and stands in the health-resort park Brusno, evaluated for quality and quantity. *Folia oecol*., 33: 64–72.

Health-resort parks are an important landscaping element, and, from the very beginning of the modern balneology, they have been embedded naturally into each watering place. The landscape design of the spa park Brusno is a close-to-nature one with minimum presence of regular planting. The park area is approximately 11.5 ha. We have inventoried in total 892 trees and shrubs, 2/3 domestic and 1/3 introduced. In both groups are dominant broadleaved woody plants. The inventory results show that the proposed sanitary cutting (148 woody plants in the park and 99 in the alder stand) is necessary for its successful development. We propose planting of new woody plants as substitution for the plants that do not fulfil their function any more, have not appropriate landscaping value and their presence in the stand is also a security risk. Because the stands mostly consist of domestic woody plants, and the National Nature Protection also requires preserving this character, we recommend to preserve it and, at the same time, to improve its attractiveness, by supplementary outplanting of exclusively domestic woody plants in appropriate shape, colour and growth forms

Key words

spa park, woody plant quality, supplementary outplanting