

## Cultural characteristics of *Phytophthora* fungi – causal agents of ink disease on chestnut trees (*Castanea sativa* Mill.) in Slovakia

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### Abstract

BERNADOVIČOVÁ, S., JUHÁSOVÁ, G. 2006. Cultural characteristics of *Phytophthora* fungi – causal agents of ink disease on chestnut trees (*Castanea sativa* Mill.) in Slovakia. *Folia oecol.*, 32: 51–58.

Several important characteristics of cultures of two species of *Phytophthora* genus – *Ph. cambivora* (Petri) Buism. and *Ph. cinnamomi* Rands – causal agents of ink disease on chestnuts in Slovakia were investigated in laboratory conditions. We observed growth rate, formation of sporangia and oospores and dimensional differences in reproductive structures of these species in their pure hyphal cultures on selected types of cultivation media. Non-parametric Mann-Whitney U-test has confirmed statistically significant differences in growth rates (average daily growth) within the same *Phytophthora* sp. between two different cultivation media at significance level  $p < 0.05$  for both examined species. Differences in growth of mycelia between the two *Phytophthora* sp. on the same cultivation medium were significant at significance level  $p = 0.001$ ; it was confirmed for both tested media. Testing using a t-test also confirmed significant differences in sporangium length ( $t = 6.19$ ;  $p = 0.001$ ) and width ( $t = 7.03$ ;  $p = 0.001$ ) between *Ph. cambivora* and *Ph. cinnamomi* and a significant difference in oospore diameter ( $t = -3.16$ ;  $p = 0.003$ ) between *Ph. cambivora* and *Ph. cinnamomi*.

### Key words

formation of sporangia, growth rate, *Phytophthora*, production of oospores

## Community structure of small mammals (Insectivora, Rodentia) in the Kľačianska Magura National Nature Reserve (Malá Fatra Mts., Western Carpathians)

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### Abstract

HLÔŠKA L., SANIGA M. 2005. Community structure of small mammals (Insectivora, Rodentia) in the Kľačianska Magura National Nature Reserve (Malá Fatra Mts., Western Carpathians). *Folia oecol.*, 32: 59–67.

The small mammal (Vertebrata) communities in the Kľačianska Magura National Nature Reserve (Malá Fatra Mts., Western Carpathians) have been surveyed systematically in 2000–2001. In the research we used the quantitative quadrat method; i.e. quantitative evaluations performed in a square grid with dimensions of ca 75 × 75 m. 72 small collapsible traps were displaced uniformly at 36 trap spots with a spacing of about 15 × 15 m. Apart from quantitative figures obtained immediately in the field, we calculated density values for each plot separately. The dimensions of the examined plot we enlarged by the observed range length (ORL) values, i.e. by bands in width equal to the radius of the individual district of the given species. The inferred influence of changes in atmospheric pressure on small mammal activity and on the catch success rate of specimens of arbitrary species has not been confirmed. Any influence of increased moisture content in soil and air on the activity of small terrestrial mammals in the relevant geobiocoenosis would not have been detected. The number of the trapped exemplars (n = 5) was statistically significantly different from the numbers of exemplars trapped on the other experimental plots where the influence of atmospheric precipitation was already evident at the beginning of the trapping period ( $\alpha = 0.05$ ;  $P = 0.0095$ ). Over the two-year period of the study we have collected a sample of altogether 45 individuals, belonging to four species (*Sorex araneus*, *Clethrionomys glareolus*, *Microtus (Pitymys) subterraneus* and *Apodemus flavicollis*). The conservation considerations of macro- and micro-habitats need to take into account findings such as the occurrence of a stabilised community of the insectivorous *Sorex araneus*, whose population density in the climax spruce forest community on a crystalline complex was higher (7.8 ind./ha) than the corresponding values for the rodents *Clethrionomys glareolus* and *Apodemus flavicollis*.

### Key words

small mammals, forest, Malá Fatra Mts.

## Tree alleys in selected localities of the Nitra town

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### **Abstract**

HRUBÍK, P., KUBASKÁ, M. 2005. Tree alleys in selected localities of the Nitra town. *Folia oecol.*, 32: 68–72.

Tree alleys are trees planted in rows. They can be situated along streets or in open landscape. In housing estates, tree alleys are planted between the blocks. The result is a closed space of greenery with pedestrian ways bordered with tree lanes. In most cases, tree lanes are planted with domestic, naturally occurring woody plants, but also with introduced species, cultural species and for-this-purpose cultivated cultivars. Dominant are broadleaved species, conifers are used rarely. The extent of greenery puts the town of Nitra to a leading position in Slovakia. There are in average 25 m<sup>2</sup> of greenery per one citizen. However, this value is somewhat blurred because the quality is very different and the distribution is not proportional. The species composition in the examined territory is not very various. There are dominant domestic woody plants: *Tilia cordata* Mill., *Acer platanoides* L., *Acer pseudoplatanus* L., *Fraxinus excelsior* L., *Quercus cerris* L. Some introduced species are present also: *Gleditsia triacanthos* L., *Platanus occidentalis* L., *Celtis occidentalis* L., from cultivars with small crown diameter are represented by: *Acer platanoides* cv. Globosum, *Tilia americana* cv. Nova L.

### **Key words**

tree alleys, street lanes, selection of suitable woody plants

## Dynamics of inorganic forms of nitrogen in soil of the Nature Reserve Žitavský luh

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### Abstract

KANTOR, M., ONDRIŠÍK, P. 2005. Dynamics of inorganic forms of nitrogen in soil of the Nature Reserve Žitavský luh. *Folia oecol.*, 32: 73–82.

The soils of the Nature Reserve Žitavský luh were sampled over the years 2003 and 2004, and the dynamics of their inorganic nitrogen forms was evaluated. Changes in inorganic nitrogen forms were observed in connection with several variables as the sampling depth, soil moisture content, soil pH value and others. The higher contents of both nitrogen forms – nitrate and ammonium nitrogen were determined in the first year (2003). The contents of nitrate nitrogen in this year ranged between 1.18–9.76 mg kg<sup>-1</sup> with the average of 3.62 mg kg<sup>-1</sup> of soil. The average content of ammonium nitrogen was 5.78 mg kg<sup>-1</sup>. The lower contents of both nitrogen forms were determined in the second year (2004). The nitrate nitrogen achieved an average content of 2.42 mg kg<sup>-1</sup> (0.85–8.57 mg kg<sup>-1</sup>) and the average content of ammonium nitrogen was 4.44 mg kg<sup>-1</sup> (3.24–6.85 mg kg<sup>-1</sup>). From all the statistical indicators, the year and sampling depth had statistically high significant effects, and the sampling date had a statistically significant effect on the contents of nitrate nitrogen. The year and to a certain extent also the sampling site had statistically high significant effects on the contents of ammonium nitrogen. The depth had a statistically significant effect on the contents of ammonium nitrogen. Statistically significant positive correlation was only found between the nitrate and ammonium nitrogen. No correlation was found between the nitrate nitrogen and moisture content and pH value of soil. The same was situation concerning the examined correlations in case of ammonium nitrogen. The presented work was accomplished within the grant project VEGA 1/0196/03.

### Key words

nitrate nitrogen, ammonium nitrogen, wetland, soil

## Notes on the fauna of moths in an air-polluted area with a dominant proportion of birch

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### Abstract

KULA, E., ČERNÝ, J., SPRUŽINA, J. 2005. Notes on the fauna of moths in an air-polluted area with a dominant proportion of birch. *Folia oecol.*, 32: 83–89.

The research was carried out in 1989–2004, in an air-polluted area with a dominant proportion of stands of a substitute tree species (*Betula pendula* Roth). Altogether 1,272 species of Lepidoptera were caught by means of light trap. From this number, 246 species show trophic association with birch (22 monophagous species, 51 disjunctive oligophagous species, 52 oligophagous species and 121 polyphagous species). Caterpillars of 92 species were recorded in crowns of birch trees. Some generally indifferent species of moths can be regarded as pests in birch stands (e.g. *Cabera pusaria* L.). Results obtained using light trap do not correspond to the method of beating off branches.

### Keywords

birch, light trap, moths, northern Bohemia, air-polluted area

## **The beetle (Coleoptera) assemblages in various biotopes in the surroundings of the Domica cave (National Park Slovenský kras)**

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### **Abstract**

MAJZLAN, O. 2005. The beetle (Coleoptera) assemblages in various biotopes in the surroundings of the Domica cave (National Park Slovenský kras). *Folia oecol.*, 32: 90–102.

In the period of 2003–2004, I studied assemblages of beetles in several biotopes in the surroundings of the Domica cave (S Slovakia). The beetles captured in the pit falls dislocated over 12 study sites represented 309 species. From the total of 41 recorded families, Curculionidae (65 species), Carabidae (65 species), and Staphylinidae (40 species) were dominant ones and shared 56% of all the observed species. I have obtained data on the structure of epigeous beetles in dependence on shadowiness. Moreover, I have focused at ecosozologically and faunistically significant beetle species as indicators for nature conservation according to the Natura 2000 System.

### **Key words**

beetle communities, ecology, indication, Natura 2000

## Macrofungi succession in differently aged Norway spruce monocultures

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### Abstract

MIHÁL, I. 2005. Macrofungi succession in differently aged Norway spruce monocultures. *Folia oecol.*, 32: 103–109.

The present contribution deals with the succession of macrofungi in differently aged Norway spruce monocultures having been planted on the former arable land. During the investigation, the group of most dominant macrofungi in each study plots changed in dependence on the stand age and climatic and edaphic conditions modified by the Norway spruce monoculture. The most frequent changes in species diversity were recorded in younger stands. On the contrary, the oldest stands were most stable. The unexpected calamity in the oldest stands considerably influenced species diversity, structure and succession of macrofungi.

### Key words

*Picea abies* (L.) Karst., macrofungi, succession, monocultures, Slovakia

## Biological evaluation of the water quality of the Hostiansky potok stream in the Tríbeč Mountains

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### Abstract

RAKOVSKÁ, A., NOSKOVIČ, J., BEŇAČKOVÁ, J. 2005. Biological evaluation of the water quality of the Hostiansky potok stream in the Tríbeč Mountains. *Folia oecol.*, 32: 110–115.

In the paper we evaluate surface water quality by the method of the saprobity index determination. Over the period 1997–1998 were taken totally 72 water samples from three sampling sites in the Hostiansky potok stream. In the sampled water were identified 8,534 benthic animals. 62 determined macrozoobenthos species were divided into 10 systematic groups. The water of the studied segment of the Hostiansky potok contained general representatives of the systematic groups Amphipoda, Plecoptera, Ephemeroptera and Trichoptera. From the results of the saprobiological evaluation of the water quality in the studied segment it follows that the water maintained approximately the same quality over the two years. The values of the saprobity index ranged from 0.7034 to 1.5923, therefore, in accordance to the Standard STN 75 7221 the water of Hostiansky potok flowing through the forest ecosystem was ranked to the 1st and 2nd classes, i.e. classified as a very clear or clear in terms of oligosaprobity zone.

### Key words

water quality, zoobenthos, dominant species, saprobity, saprobity indicators

## **Production of the aboveground dendromass of European chestnut (*Castanea sativa* Mill.) in relation to leaf area index and climatic conditions**

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### **Abstract**

TOKÁR, F. 2005. Production of the aboveground dendromass of European chestnut (*Castanea sativa* Mill.) in relation to leaf area index and climatic conditions. *Folia oecol.*, 32: 116–124.

The work deals with the above-ground dendromass formation and its relationship to both leaf area index (LAI) and climatic conditions in different stand types of European chestnut (*Castanea sativa* Mill.) at the series of PRP Lefantovce (Forest administration Nitrianska Streda, Forest enterprise Topolčianky, Slovak Republic) tended during 25 years by moderate crown thinning with frequency of 5 years. The highest mean periodical increment per leaf area unit ( $\text{g dm}^{-2} \text{ year}^{-1}$ ) was observed in all stand types during years 1977–1981 and 1982–1986. It was found out that production of above-ground dendromass of European chestnut stands is in close correlation with LAI, with admixture of woody-plant species in stands, their tending (thinning) and climatic conditions. Rainfalls showed to be the limiting factor (not less than 500 mm per year).

### **Key words**

leaf area index, climatic conditions, production of above-ground dendromass

## Ecologically allowable populations of hoofed game in the District Stropkov

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### Abstract

BELINA, P., HLAVÁČ, P. 2005. Ecologically allowable populations of hoofed game in the District Stropkov. *Folia oecol.*, 32: 125–136.

Hoofed game is a very important component of forest biocoenoses. Our research objects were forest ecosystems in NE Slovakia. We evaluated the current stocks of game, on the background of the standardised winter stocks (SWS), and the numbers of the killed (shot) animals. The aim of this work was the game management with focus on the hoofed game and a proposal of measures for lowering the damage to the ecosystems caused by the hoofed game in the concerned area over the years 1997–2002. To date, there have been certified 11 hunting grounds in the territory of the District Stropkov. The average area of a ground is 3,140 ha. For the whole district, they have been determined, according to the valid standards, the following stocks for red deer – 300 animals and 208 animals roe deer. The present stocks of red deer in the District Stropkov need to be concerned as underestimated, do not corresponding to the current possibilities and the carrying capacity of the hunting grounds. Comparing the standardised game stocks with the current state in spring, we obtain a figure of 56% only. On the other hand, it has been recognised that the present amount of the red deer in the district is too low. If the present SGS were taken as a base for the management of the red deer in the district in the future, it would mean a tendency to further decline of the present, evidently low SGS in the future, in many hunting grounds with only a very low number of animals left for survival.

### Key words

Stropkov, hoofed game, hunting area, spring game stocks, planned structure