

Spruce production power dependence on changes of water content in a soil

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Abstract

Brezina, L., Jarný, M., 2004: Spruce production power dependence on changes of water content in a soil. *Folia oecol.*, 31 (1), p. 2–7.

Water is one of the limiting factors of plants existence. Also the highest production of tree species in Slovakia is mainly in connection with favourable water regime as well. Concerning changing of vegetation climate, water regime of soil is starting to change. Especially there is a risk of declining of water content utilisable by plants. It causes the degradation of the soil biotic activity, physiological weakening of the plants and decrease of their production power. The aim of this work is to investigate and to analyse the influence of the water content in soil on spruce production power. The water content was measured at a depth of 30 cm in particular months of vegetative periods during 10 years. The influence of these changes on a basal area increment of particular trees at forest ecosystems of higher altitudinal vegetation zones by regression model was investigated. Observation of the changes of the spruce basal area increment at higher altitudinal vegetation zones (above 800 m above sea level) in dependence of monthly water content in soil was done in the period of 1991–2000 in the region of Oravská Polhora.

Key words

spruce, increment, production power, water content

Foraging and flight activity of bats in beech-oak forests (Western Carpathians)

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Abstract

Ceľuch M., Kaňuch P., 2004: Foraging and flight activity of bats in beech-oak forests (Western Carpathians). *Folia oecol.*, 31 (1), p. 8–16.

Bat assemblage (14 species) was studied in beech-oak forests in south-eastern part of Kremnické vrchy Mts. (Central Slovakia) from May to September in 2002 and 2003. Mist-netting method, ultrasound bat-detectors and faecal pellets analyses were used for study of foraging and flight activity of bats. Bats were classified according to foraging strategies. Considering prey composition, 7 orders of insects and one order of arachnids were identified in examined bat droppings. The imagos of moths (Lepidoptera) were the most important component in diet of studied bat assemblage (V = 46%, F = 68%). All five basic foraging strategies were found in the studied bat assemblage. Almost the same portion took gleaning, slow hawking and fast hawking. Flight activity of bats during nights was recorded in 16% of observed 1505 minutes. Recorded bat passes were assigned to *Myotis* group (67%), and non-*Myotis* group (33%). All of seven studied habitat types were used by bats. The highest level of flight activity was recorded on small open areas and forest edges.

Key words

Chiroptera, assemblage, strategy, insects, hunting, diet

Heavy metals as contaminants of forest ecosystem in surroundings of the metallurgical plant Železiarne Podbrezová, holding

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Abstract

Hlaváčik, R., Skoršepa, M., Kmeťová, J., 2004: Heavy metals as contaminants of forest ecosystem in surroundings of the metallurgical plant Železiarne Podbrezová, holding. *Folia oecol.*, 31 (1), p. 17–22.

The paper deals with the determination of heavy metals (zinc, cadmium, lead and copper) in assimilatory organs of Norway spruce (*Picea abies* (L.) Karst.) and European beech (*Fagus sylvatica* L.) taken from forest ecosystem situated in surroundings of the metallurgical plant Železiarne Podbrezová, holding. A local monitoring of a valley in the municipality Podbrezová was performed. Samples of needles and leaves were taken from 12 locations on both sides of the valley. At the same time reference samples from relatively undisturbed locality in the Protected Landscape Area (PLA) Poľana near the municipality Lom nad Rimavicou were taken. Concentrations of heavy metals mentioned above were determined in two-year-old needles of spruce and leaves of beech by means of the flow-through galvanostatic stripping chronopotentiometry.

Key words

heavy metals, spruce, beech, stripping chronopotentiometry

Site characteristics and ecological stability of forest ecosystems on permanent monitoring plots in the Protected Landscape Area – Biosphere Reserve Poľana

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Abstract

Nociarová, G., 2004: Site characteristics and ecological stability of forest ecosystems on permanent monitoring plots in the Protected Landscape Area – Biosphere Reserve Poľana. *Folia oecol.*, 31 (1), p. 23–30.

The paper deals with habitat characteristic and ecological stability of forest ecosystems in the Protected Landscape Area Poľana in working-plan area Slovenská Ľupča and Osrbliie. Ecological stability means that ecosystem is able to return to its dynamic equilibrium or to normal evolution state by means of its own internal mechanisms. There are two components of ecosystem stability: ecosystem resistance and ecosystem resilience. To determine ecological stability there is used the method presented in this thesis. The quantification and classification of the forest ecostability is very important for planning of the ecosystem management, especially in protected areas. Bad condition of forest ecosystems in Poľana requires effective measures, ways and methods to prevent the ecological destruction and preserve ecological balance.

Key words

forest ecosystem, ecological stability, ecosystem management

Evaluation of organic substances and dissolved oxygen concentrations in a water course in the Tribeč Mountains

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Abstract

Noskovič, J., Sozanský, P., Babošová, M., 2004: Evaluation of organic substances and dissolved oxygen concentration in a water course in the Tribeč Mountains. *Folia oecol.*, 31 (1), p. 31–35.

In the water course Hostiansky potok in the Tribeč Mountains over the period of the years 1995–1998 were evaluated organic substances and dissolved oxygen concentrations. For determination of the organic substances concentration was used indirect method based on the oxidation of the organic substances with the potassium permanganate and it is represented as a chemical oxygen demand with potassium permanganate. Results were presented in $\text{mg O}_2 \cdot \text{dm}^{-3}$. The results show that the lowest mean values of the chemical oxygen demand (COD_{Mn}) during the research period were recorded in the winter season. That is connected with the unsuitable thermal conditions for the organic matter decomposition in the water course. The lowest COD_{Mn} value during the research period was ascertained in the first sampling site which is located in the forest. The mean dissolved oxygen concentration in the whole research period was $10.53 \text{ mg O}_2 \cdot \text{dm}^{-3}$. Seasonal dynamic regularity in the concentration of the dissolved oxygen during the research period has not been manifested. The sampling sites exercise a weak influence on their changes. According to the calculated COD_{Mn} and dissolved oxygen characteristic values (STN 75 7221), the waters in all sampling sites were included in the 1st class of the surface water quality (very clean water).

Key words

mountain, water course, dissolved oxygen, COD_{Mn} , surface water quality