



**Institute
of Forest
Ecology**
Slovak
Academy
of Sciences

We study **forest ecology**

Basic and applied research
on forest environment under
global changes, natural
disturbances and human
exploitation

Study of forest biodiversity,
processes in ecosystems,
responses and adaptations
of organisms and associated
social aspects

Since 1983

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Department of
**Animal and Ecological
Interactions**

Research areas

- ▀ ecology and distribution of phyllophagous moth larvae on trees
- ▀ dynamics of scolytine beetles in mountain forests after disturbances
- ▀ ecology and predator–prey relationships in ladybirds on coniferous trees
- ▀ spread, distribution and significance of invasive insect species

Head of the Department

Peter Zach, PhD.

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The **Department of Animal and Ecological Interactions** focuses on biology and ecology of functionally important animals in forest and urban habitats. Ecology and distribution of phyllophagous moth larvae in forest stands, long-term dynamics of scolytine beetles in mountain spruce forests structured by wind or other natural disturbances, broad aspects of ecology of ladybirds on coniferous trees, including predator-prey relationships, as well as introduction and spread of invasive insect species, feature prominently in the Department's research activities. Results of investigations are applied in forest protection against pests and in conservation of threatened species and their habitats.

Join us!





Mlyňany Arboretum

General characterisation

- ▀ collection of more than 1950 woody plant taxa on the area of 67 ha
- ▀ largest collection of non-native trees and shrubs in Slovakia
- ▀ plant gardening based on phytogeographical principle
- ▀ rose garden with more than 200 cultivars of roses

Head of the Arboretum

Jana Konôpková, PhD.

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Mlyňany Arboretum was found in 1892 by a passionate gardener and dendrologist Dr. Štefan Ambrózy-Migazzi, who carried out the first outplanting on the area of 40 hectares in the oak-hornbeam undergrowth near Zlaté Moravce. Thus originated the first evergreen dendrological collection in the central Europe. In 1953 Mlyňany Arboretum became the part of the Slovak Academy of Sciences, which laid the conditions for intense development of scientific and research activities and expansion of woody plants collection. The presentation of the woody plant collection, educational and popularization activities are another significant work of the largest Slovak arboretum.

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Department of **Dendrobiology**

Research areas

- ▀ *in vitro* protocols for woody plant propagation and enhanced pharmaceuticals production
- ▀ plant-microbial interactions for plant growth and stress tolerance stimulation and pest and disease regulation
- ▀ principles of tree invasion process and identification of bio-herbicides effective in the invasive woody plant regulation

Head of the Department

Peter Ferus, PhD.

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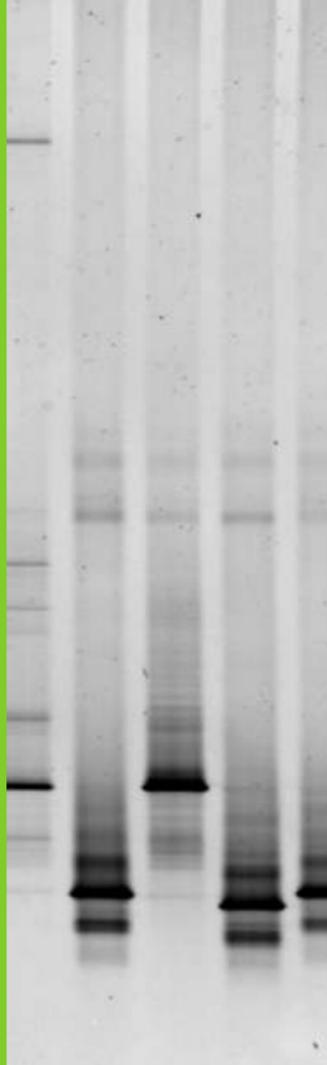
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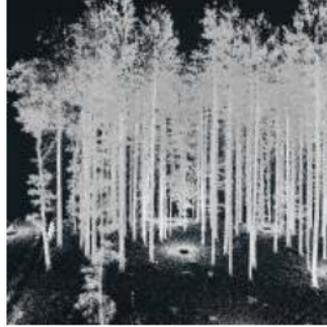


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The research of the Department of **Dendrobiology** comprises searching for ways how to enlarge ornamental plantation resistance to stressors associated with the climate change (drought, heat), study of plant interactions with microbes to stimulate their growth and protection, formulation of *in vitro* protocols for fast propagation of attractive woody plant genotypes and multiplication of phyto-pharmaceuticals production, as well as explaining of the role of reproduction-biological and eco-plasticity traits in the woody plant invasion process and identification of bio-herbicides for efficient regulation of invasive woody plants.

Join us!





Department of **Disturbance Ecology**

Research areas

- ▀ disturbances and global change impacts on spruce forest ecosystems
- ▀ development of decision support system for spruce ecosystem management TANABBO
- ▀ chemical ecology in the system spruce trees and bark beetles

Head of the Department

Jana Marešová, PhD.

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The **Disturbance Ecology** research group's research includes the diagnosis of spruce forest ecosystems state and prediction of their development based on terrestrial in situ methods combined with remote sensing. It follows the developing of models indicating the acute risk of bark beetles attack on spruce stands and predicting the further course and spreading of the bark beetle disturbance combined in our decision support system TANABBO. We analyse semiochemicals in the spruce – bark beetles communication system under laboratory and field conditions. Our results are applied in the decision-making process for disturbances in spruce ecosystems and management of bark beetle populations based on attractants and anti-attractants.

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Department of
**Evolutionary and
Behavioural Ecology**

Research areas

- ▀ swarming behaviour of tree-dwelling bats
- ▀ sexual conflict in nuptial gift-giving bush-crickets
- ▀ habitat use and foraging ecology of endangered species
- ▀ host-parasite co-evolution in spiders

Head of the Department

Peter Kaňuch, PhD.

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The research of the Department of **Evolutionary and Behavioural Ecology** includes mechanisms of biological evolution in animal species of different taxonomical groups as tree-dwelling bats, birds, insects and spiders. In particular, adaptations of organisms, life strategies, reproductive behaviour, colonisation histories, establishment and survival of populations in new habitats and impact of forest fragmentation on distributional patterns, genetic structure and phenotypic variation are studied. Results of this observational or experimental research that is based in the field or in the laboratory are applied in biodiversity conservation and management of species of European importance.

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Department of
**Forest Ecosystems
Dynamics**

Research areas

- ▀ revitalization processes in forests
- ▀ mycocoenology, phytopathology and phytocoenology
- ▀ phenological response of forest plants on changing conditions of environment
- ▀ spatio-temporal dynamics of the nutrients, risk and toxic elements as well as energy in the soil-plant system

Head of the Department

Branislav Schieber, PhD.

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Forest Ecosystems Dynamics research group studies the spatio-temporal dynamics of biotic and abiotic components within the forest ecosystems, e.g. self-revitalization of forests after removal or reduction of emissions and the impact of changing environmental conditions on the growth and production processes of woods. Attention is paid to changes in mycoflora and phytopathological manifestations of forest trees affected by ongoing anthropogenic activity. Phenological response of forest plants to global changes of the environment over the last decades and spatio-temporal dynamics of nutrients, risk and toxic elements and energy in the soil-plant system are studied. Results may be applied in forest or environmental management.

Join us!





Department of **Plant Ecophysiology**

Research areas

- ▀ photosynthetic processes, tree-water relations and mineral nutrition
- ▀ dendroecology and dendrochronology
- ▀ physiological responses to abiotic disturbances in forest ecosystems
- ▀ diversity of forest vegetation and spreading of invasive plants

Head of the Department

Gabriela Jamnická, PhD.

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Department of **Plant Ecophysiology** investigates growth processes, disturbance regimes, treeline dynamics and changes in forest trees populations using tree-ring methods and dating; photosynthetic and biochemical processes in tree-species to provide rapid screening of their vitality and stress responses ; evaluation of plant species diversity along ecological gradients. Results of the field and laboratory studies help to understand the mechanisms involved in plant adaptation and acclimation to adverse environmental conditions, that is significant in development of meaningful selective and phenotyping tools for sustainable forestry and landscape management.

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Department of
**Plant Pathology
and Mycology**

Research areas

- ▀ biology and ecology of fungal and invasive insect species, their host range
- ▀ spread, extent and intensity of woody plants diseases
- ▀ mode of reproduction, genetic structure and diversity of pathogens
- ▀ evaluation of health state of trees, control measures

Head of the Department

Katarína Adamčíková, PhD.

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Department of **Plant Pathology and Mycology** is focused on diseases of trees in urban greenery and forest stands, fungal pathogens and insect pest identification, studies on host-pathogen interactions and identification of causes of the trees dying. We deal also with fungal taxonomy and diversity, methods of tree protection, identification and effects of pathogenic fungi on insect pests, and virulence bioassays in the laboratory. The research includes studies on the impact of stand conditions on ornamental woody plants in urban stands. In applied research we realize consultancy and expert services regarding health conditions and tree stability assessment in the urban environment.

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Department of **Strategic Environmental Analyses**

Research areas

- ▀ strategic decision-making, climate and forest governance
- ▀ behavioural change to sustainability transformation and carbon neutral economy
- ▀ governance innovations, social innovations in marginalized rural and urban areas

Head of the Department

Prof. Tatiana Kluvánková

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Department of **Strategic Environmental Analyses** forms joint working place SlovakGlobe established with Slovak University of Technology and aims to enhance societal transformation to carbon neutral economies, via developing and testing incentive tools for ecosystem service governance in marginalised and urban areas. It has been involved in more than 10 EU research projects and plays active role in international scientific networks: International/European Society for Ecological Economics, Earth System Governance or International Association for the Study of Commons. It concerns original experimental methodology for knowledge co-creation and developed under the Laboratory of experimental social sciences (VEEL).



