

UNIVERSITATEA *TRANSILVANIA*
BRAȘOV



TRANSILVANIA UNIVERSITY OF
BRAȘOV

Facultatea de Silvicultură și
Exploatare Forestiere

Faculty of Silviculture and
Forest Engineering

Lucrările sesiunii
științifice
**PĂDUREA ȘI DEZVOLTAREA
DURABILĂ**

Proceedings of the
Symposium
**FOREST AND SUSTAINABLE
DEVELOPMENT**

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• SILVOBIOLOGIE

• SILVOBIOLOGY

stimulation of natural forest regeneration, introducing monitoring in forestry of B&H, revival of scientific research in forestry, de-mining the forest land, introduction of Fund for forest regeneration and protection.

Actual image of quality of the forests in Bosnia and Herzegovina, which is being graded as bad, is the result of many negative influences both objective and subjective ones

It is accustomed that term integrate protection signifies set of all methods and assets that can be applied in forest protection, which is very simple definition. Integrate protection though doesn't mean that all known methods of fight have to be applied in forest protection, nor is it simple set of different measures that could be applied at the same time or successively. This term is much more complex; it represents human comprehension, its relation toward the forests, understanding the complexity of forest ecosystems and interaction of all factors that build these communities, taking into account the elimination of one harmful agent can cause other negative impacts. All manifestations in nature are correlated, but not by the pattern, that is why it isn't possible to determine general approach that would be universal and applicable in every occasion.

Integrate forest protection is in that way more of strategy than direct action, where is possible to interpret differently this term, depending on experience, education level and people intention. In this manner integrate protection is significant not only for the foresters but for the other specialist in nature science, and for the state institutions (legislative, executive, judiciary), education, media etc. So this is integration of many activities (those belonging to the forestry and to other users of forest land, and those under competency of state administration) as attempt to eliminate or reduce detriment and preserve the stability of endangered forest.

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POLITICAL BACKGROUND OF FOREST CONDITION MONITORING WITH RETROSPECTIVE ON SITUATION IN SERBIA

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Abstract: *More than two decades ago Europe was alarmed by growing concerned that air pollution effects causing catastrophic forest damage. The main symptom of forest damage was defoliation of tree crowns. Awareness that observed damage was caused by air pollution led in 1985 to the establishment of the "International Co-operative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests" (ICP Forests). ICP Forests was established under the Convention on Long-range Transboundary Air Pollution (CLRTAP) of the United Nations Economic Commission for Europe (UNECE). CLRTAP provides an institutional framework that brings together science and policy by means of an international scientific cooperation and political negotiation platform. Forest condition is a matter of concern for many governments. Today, 41 countries are participating. Institute of Forestry, Belgrade as National Focal Center for ICP Forests annually provides results of national biomonitoring and spread data about forest condition to scientific population as well as to the institutions - users of monitoring data.*

Key words: biomonitoring, ICP Forests, air pollution, crown condition

1. INTRODUCTION

Forestry and their sustainable development are the principal issue of many international and national policies. One of the main parameter for developing of national policies and strategies is forest monitoring data. Biomonitoring as a long-term, comprehensive and intensive monitoring can provide data on the factors that affect forest health status. Forest health status in Europe is assessed by the International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests). These data are needed to provide scientific basis for action to be undertaken at the political level. ICP Forests was established under the Convention on Long-range Transboundary Air Pollution

(CLRTAP) of the United Nations Economic Commission for Europe (UNECE). CLRTAP provides an institutional framework that brings together science and policy by means of an international scientific cooperation and political action.

The Convention on Long-range Transboundary Air Pollution, adopted 27 years ago, is the oldest of the UNECE environmental conventions. Between 1972 and 1977 several studies confirmed the hypothesis that air pollutants could travel several thousands of kilometers before deposition and damage occurred (*Handbook for the 1979 Convention On Long-Range Transboundary Air Pollution and its Protocols*, 2004). This also implied that cooperation at the international level was necessary to solve problems such as pollution of air and regional impact of pollutants. In the early 1980s increase defoliation of tree crowns was observed in large areas of Europe. Growing concern that the observed damage was caused by air pollution led in 1985 to the establishment of the "International Co-operative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests" (ICP Forests).

2. MANDATE, OBJECTIVES AND PROGRAMME IMPLEMENTATION

ICP Forests supplies CLRTAP with scientific data for international air pollution abatement policies. The mandate of ICP Forests is:

Monitoring effects of air pollution as well as other biotic and abiotic stress factors on the condition and development of forests ecosystems in Europe;

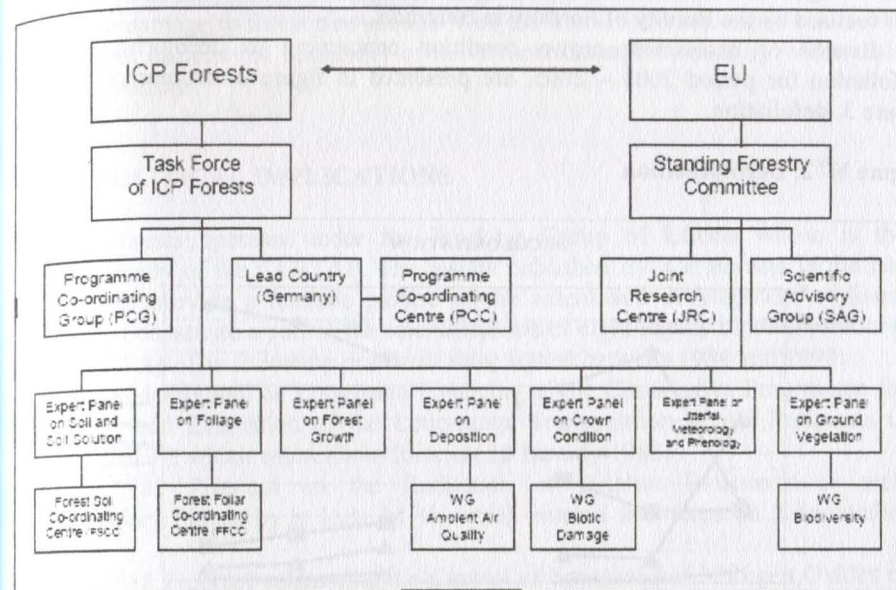
Contribution to a better understanding of cause-effect relationships in forest ecosystem functioning.

ICP Forests aims to assess forest condition and its development in Europe, to relate it to environmental factors and to regularly inform policy makers, scientists and the public of the results.

ICP Forests is supervised by its Task Force, in which all participating countries are represented. Each participating countries maintain National Focal Centres which conduct assessment and research activities. Research is based on ICP Manuals on methods and criteria for harmonised sampling, assessment, monitoring and analysis of the effects of air pollution on forests. The Task Force is assisted by the Programme Coordinating Centre (PCC), by a Programme Coordinating Group (PCG), and by several Expert Panels and Working Groups. The structure of these bodies and the related bodies of EU are shown in the Figure 1.

The Task Force is the highest body of ICP Forests. All relevant programme issues have to be presented to the Task Force. The Programme Co-ordinating Group has the task to promote and supervise a continuous review of the programme and to support the Chairman in all issues of relevance for the future scheme of the programme. The PCC is entrusted with a broad range of tasks in the fields of programme management, data processing, evaluations and reporting. The Expert Panels of ICP Forests have the task to further develop the harmonised methods and criteria defined in Manuals. Implementation of objectives and mandate is fulfilling by assessments on a large-scale 16x16 km grid (Level I) and intensive monitoring on Level II plots. The NFCs have the task to submit the Level I and Level II data.

Figure 1. ICP Forest organization structure.



(source: Manual on methods and criteria for harmonized sampling, assessment, monitoring and analysis of the effects of air pollution on forests, 2004.)

The Level I network consists of approximately 6000 monitoring plots, which are systematically arranged in a nominal 16x16km grid throughout Europe. Monitoring activities on Level II have been established with the aim of researching key factors and processes on the ecosystem scale.

3. RESULTS OF BIOMONITORING IN SERBIA

The first assessment of forest health condition in Serbia, according to ICP methodology Level I was performed in 1988. The second assessment was in 1990, and then there were no assessments till 1994 (Forest Condition Monitoring in the republic of Serbia, Belgrade 2005). From 1994 – 2000, the assessment of forest condition continued, but every year on increasingly lower number of plots. In 2002, the activities of some researchers at the Institute of Forestry were directed to the international collaboration and the participation of our country in the EU programmes. After these efforts The Forest Directorate nominate the Institute of Forestry as National Focal Centre of Serbia for monitoring forest health condition. In 2003, in collaboration with Institute of Lowland Forestry and Environment, 103 sample plots in 16 x 16 km grid were reconstructed and the crown condition of forests trees was assessed. In 2004, it was concluded that the reconstructed 103 sample plots did not represent fully the status of vegetation cover in Serbia, so that additional 20 sample plots were selected and installed on the area of central of Serbia, and 7 new plots in Vojvodina. The total number of installed sample plots in

the Republic of Serbia was then 130 sample plots. In 2004, the more in-depth monitoring of forest tree diseases and soil chemistry on additional 20 sample plots was realised by the Faculty of Forestry in Belgrade.

Results of assessment crown condition concerning to decolorisation and defoliation for period 2003 – 2005, are presented in figure 2. decolorisation and figure 3. defoliation.

Figure N° 2. Decolorisation

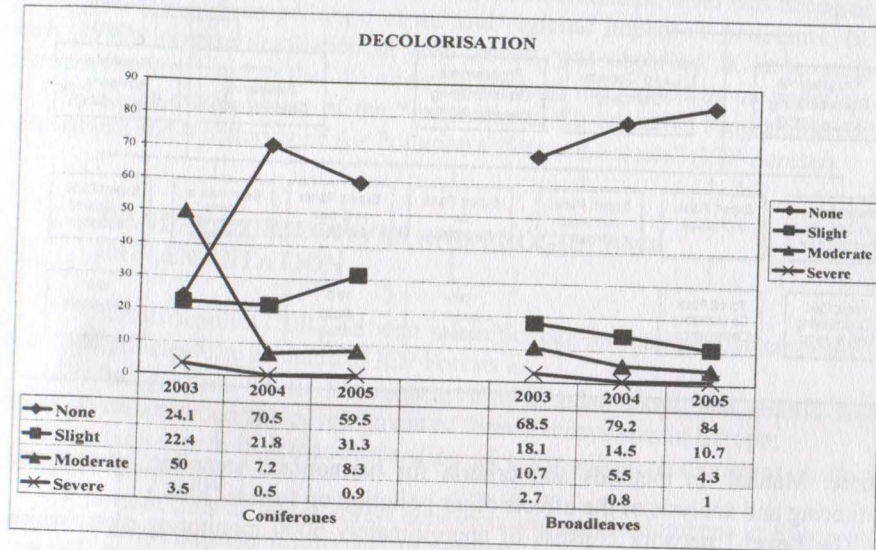
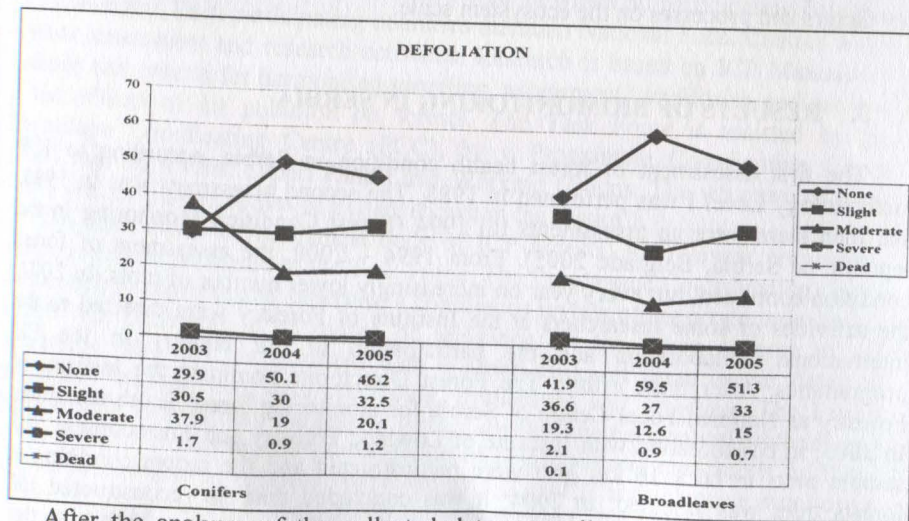


Figure N° 3. Defoliation



After the analyses of the collected data, as well as based on the results of numerous multidisciplinary scientific projects dealing with the complex issues of the causes of forest dying, it can be concluded that forest dying is the consequence of

unfavorable effects of a complex of biotic and abiotic factors, which can be simultaneous or alternating successively. Regarding pollutants, there are no reliable data on the damage to forest tree species from the known sources of pollutants, but this does not exclude the possibility of the chronic damage to trees by wider-scale harmful emissions.

4. POLITICAL IMPLICATIONS

ICP Forests operates under the Working Group of Effects whose is the subsidiary body of the CLRTAP. The results published by ICP Forests in the last two decades provide a realistic picture of the extent and development of forest damage and constitute a part of the scientific basis of eight legally binding protocols under CLRTAP. The following protocols were signed between 1984 and 1999:

The 1984 Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), which entered into force on 28 January 1988;

The 1985 Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 %, which entered into force on 2 September 1987;

The 1988 Protocol concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes, which entered into force on 14 February 1991;

The 1991 Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes, which entered into force on 29 September 1997;

The 1994 Protocol on Further Reduction of Sulphur Emissions, which entered into force on 5 August 1998;

The 1998 Protocol on Persistent Organic Pollutants, which entered into force on 23 October 2003;

The 1998 Protocol on Heavy Metals, which entered into force on 29 December 2003;

The 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone.

In Serbia, Environment Protection Agency (EPA) as an institution of Ministry of Science and Environmental Protection and Directorate of Forestry as an institution of Ministry of Agriculture Forestry and Water Management are users of published results by National Focal Centre. One of the main functions of EPA is collection, processing and unification of environmental data, reporting on environmental conditions and environmental policy implementation. Ministry of Science and Environmental Protection among the wide responsibilities identified in Law on Ministries (The Official Gazette R Serbia Nr 19/04 and 84/04) include transboundary pollution of air and water. Directorate of Forestry nominate and finance National Focal Centre in ICP's biomonitoring.

Both Ministries have imputes in National Environmental Strategy and other significant policy documents where is emphasized significance of monitoring in forest sector.

The monitoring activities pursue the objectives of Resolutions of the Ministerial Conference on the Protection of Forests in Europe: S1 - European

Network of Permanent Sample Plots for Monitoring of Forest Ecosystems, and Resolution H1 - General Guidelines for the Sustainable Management of Forests in Europe and Resolution L2 - Pan-European Criteria, Indicators and Operational Level Guidelines for Sustainable Forest Management

The results of ICP Forests also contribute to the discussion on global forest policy, such as the Intergovernmental Forum on Forests leading to the United Nations Forest Forum and other important discussion forums such as the World Forestry Congress.

5. CONCLUSION

Effects of air pollution on forests ecosystems are complex and difficult to isolate and quantify but among the complex of antropogenic and natural stresses air pollution is important stress factor

Biomonitoring has a key role to detect and evaluate the long-term effects of air pollution on forest ecosystems. With its approximately 6000 Level I and 860 Level II plots the pan-European monitoring system of ICP Forests is the biggest biomonitoring system. ICP Forests offers a unique source of information on the condition of forest ecosystems.

The data gathered in this programme and their evaluations are of great interest for policy making processes not only in the field of environmental protection but also for different kinds of forest policy items, such as sustainable forest management, biodiversity in forest or the effects of climate change on forest ecosystems.

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INCIDENTAL FELLING – RISK OF ITS OCCURRENCE AND ITS IMPACT ON TIMBER SUPPLY

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Abstract: *Incidental felling may significantly affect the forest management as well as the timber market. The objective of this paper is to asses the risk of occurrence of incidental felling and their impact on timber supply in the Slovak Republic (SR). The first part analyses the risk of incidental felling occurrence using distribution probability functions. These functions enable to calculate point estimations which express the probability of destruction of 1 hectare of the forest stand during the forthcoming decennium. The results show a significant effect of incidental felling on forest land management. There is a 12 % probability that the forest stand will not reach the expected rotation age. Calculated probabilities can serve as a basis for planning and decision making of forest users.*

The second part of the paper analyses the impact of incidental felling on timber supply in the SR during the years 1990 – 2004. Based on input data, the linear econometric model of timber supply is developed and verified. The econometric analysis confirms the significance of incidental felling impact on timber supply and, based on the calculation of elasticity, its intensity during mentioned period is quantified. The developed model offers information for simulation of the effect of incidental felling that can be used by the forest enterprises as well as the wood-processing enterprises in the process of creation of prognoses and marketing strategies.

Key words: forestry, Slovak Republic, incidental felling, risk, timber market, timber supply

1. INTRODUCTION

During the years 1990 – 2004, the share of incidental felling in the SR has varied from 35 % to 59 %. In November 2004, the windstorm hit the area of the SR and caused wind throw disaster in forest stands with total area of approximately 330 thousands hectares. The windstorm reached speed of almost 200 km per hour. Total timber volume in destroyed forest stands reached roughly 4.7 mil. m³ (the annual calculated cut in the SR is approximately 6.5 mil. m³). Nowadays, two years after the windstorm, the destroyed timber has not been totally processed yet.