

The forests are particularly important for Bulgaria. They are concentrated mainly in the mountain zones. They occupy 36.72% of the country's territory. The area they cover amounts to 4.076 million ha, of which 2.57 million ha (70.4%) are broadleaf forests, and 29.6% are coniferous. Most forests in Bulgaria are young or middle-aged.

Bulgaria's location within the temperate geographical latitudes places it in the zone of the deciduous forests. Different types of oak and ordinary beeches are prevalent. In the mixed oak forests the species that are typical for the South and South-East Europe – *Quercus cerris* L., *Quercus frainetto* Ten and *Quercus pubescens* Willd.s.l. are dominant. They are located in the lowland and the hilly parts. The coniferous zone of the mountain consists mainly of Scots pine and spruces. In the lower part of the zone are found Silver fir and Austrian black pine. Specific for the country are the dense forests, consisting mainly of field elms and ashes. The distribution of the total reserve of deciduous high-stemmed and coniferous forests in mln. m<sup>3</sup> is shown on the fig. 1 and fig. 2.

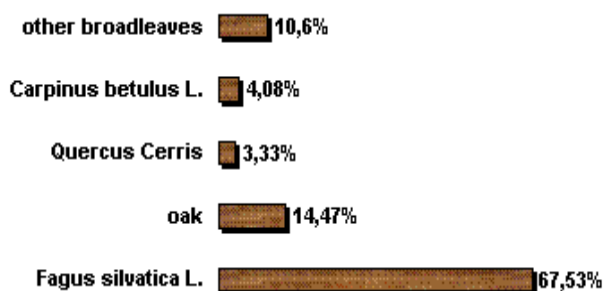


Fig.1

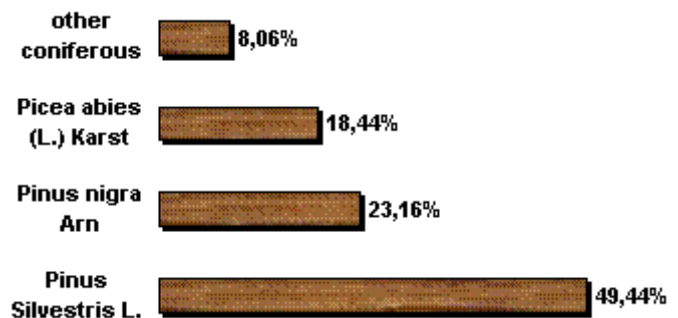


fig. 2

Forest management is based on the policy and the legislation related to management of forest resources for a continued period of time, aiming at development, protection and maintenance of the forest ecosystems.

In forests with special status or high economic value within Bulgaria high-stemmed trees are cultivated. The type, methods and the way of cutting as well as their intensity and frequency are coordinated with the trees' age and biological requirements, as well as the nature, economic and social conditions.

Preventive cutting is taking place in plantations with worsening sanitary conditions, despite the age of the plants and the type of the economy.

Every cutting is preceded by active work by foresters who mark the trees envisaged for cutting. While managing a forest, marking is the main activity that can monitor problems and remaining trees, regulate the tree content and origin. It also aims at protecting and developing the primary and secondary types of trees with genetic, technical and aesthetic properties.

Water protective forests and territories have been created for the protection of drinking water sources, regulation of the water stream and maximum accumulation of water quantities from the forests.

A system of protective forests was created in order to master the erosion, avalanches, landslides, floods, destabilization of the coastal frontage of the large rivers, Black Sea and the Danube Islands, as well as to increase of the upper limit of the forest in the high mountains. The water protective forests in the country amount to 513 878 ha.

Forest fires in the years 2000 – 2003 have destroyed more than 1,3 million dca of forest fund, which represents 3,24 % of the overall forest resource of the country.

The social and the economic losses amount tot millions leva, not counting the inestimable environmental losses.

To secure the forests from fires a number of preventive anti-fire measures are being undertaken. Every year an average of 200 km of anti-fire glades and mineralised frontages are built for implementation of projects for limiting the fires. Dry grass and waste are removed from fire-sensitive sites near railway stations, roads, recreation areas, and agricultural land. Every forest administration has developed operational plans for preventive fire safety activities and fire-fighting.

Land-improvement forests and territories have been created for the fight against the erosion, for improvement of the micro conditions within agricultural lands, for protection of the engineering facilities, and to reduce the negative impact caused by the industrial centres, the highways and the railway roads. Up to this moment a total of 36 040 ha. of land-improvement forests have been defined.

The protection of the genetic fund of the forest trees is performed by establishment of seed basis, plantations, dendrarium and botanic gardens which in total add up to 44 622 ha.

Bulgaria has been a party on the UN/ECE Convention on Long-range Transboundary Air Pollution (LRTAP Convention) since 1983, with obligations concerning the signed and ratified protocols. The fulfilment of these obligations comprises also the cooperation within the effect-oriented activities under the convention. This document sets the country's participation in the two international programmes – the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (Level I and Level II) and Programme on Mapping of Critical Levels and Loads (ICP Modelling and Mapping), as primary tasks in the agenda. On a European level, these programmes are managed by International Coordination Centres, established under the auspices of the Economic Commission of the United Nations for Europe (UN/ECE) and European Commission.

The Ministry of Environment and Waters (MoEW) is the responsible government institution for LRTAP Convention, and the Executive Environment Agency (EEA) at MoEW is the government institution nominated for National Focal Centre for these two programmes. The responsibilities of MoEW/EEA consist, on the one hand, in submitting, in a standardized form and within agreed report deadlines, of representative and authentic information, gathered according to standard adopted methodologies and approved by the responsible national and international institutions, to the respective International Coordination Centres . On the other hand MoEW/EEA is responsible for the implementation of adequate sector management policy with regards to the adopted decisions on the ratified Protocols. So far, information related to ICP Forests - Level I and Level II and the data concerning critical loads – acidity, sulphur and nitrogen have been regularly submitted since 1994, 2003 and 1996 respectively.

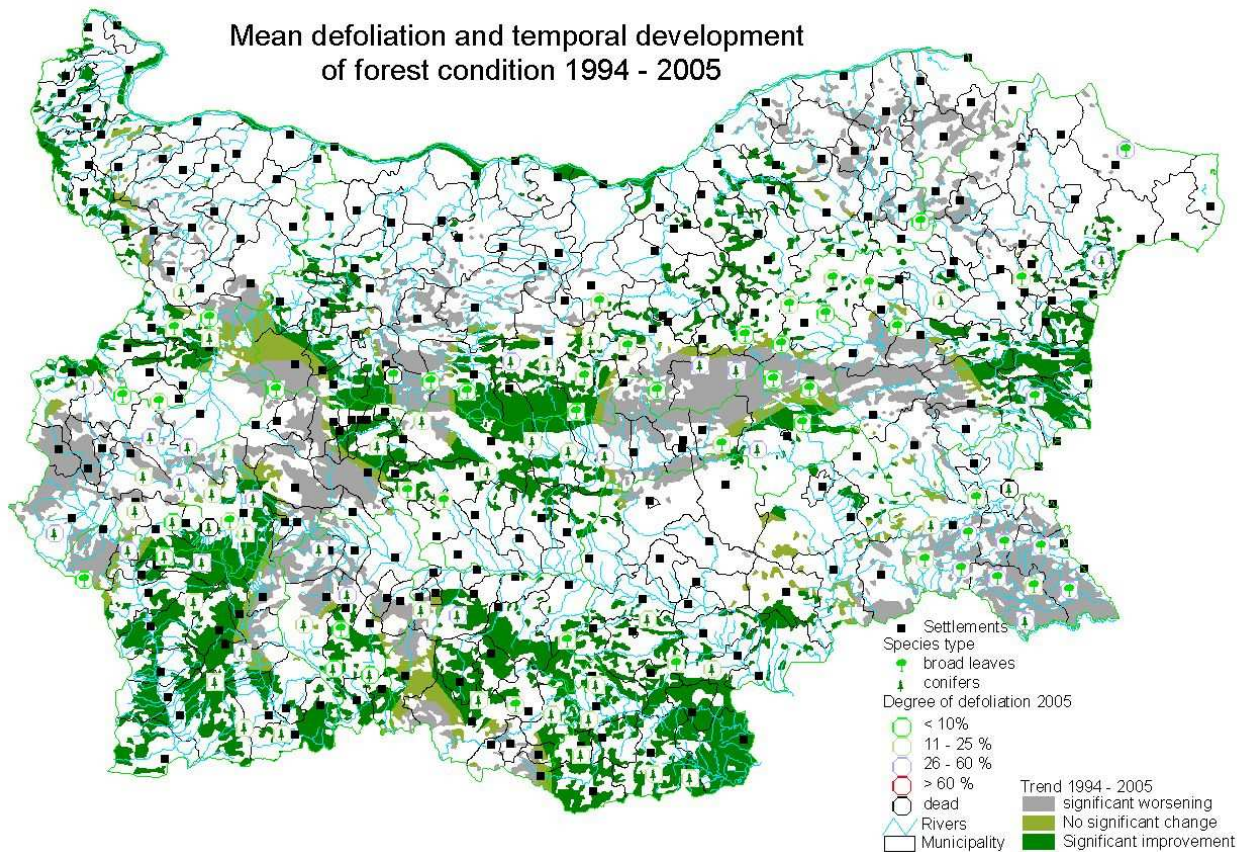
The Ministry of Agriculture and Forestry (MoAF), which is the institution in charge of management and policy-making in relation to forests, needs regular information about the condition of Bulgarian forests as result of anthropogenic (transboundary and local air pollution) and natural stress factors.

The International Cooperative Program “Forests” has been found in order to monitor the condition and dynamics of changes that occur in forest ecosystems, give information regarding the damages, their causes as well as the opportunities for taking managerial decisions and certain actions from the Ministry of Agriculture and Forestry (MAF) and the National Forestry Board (NFB) such as: improving the forests’ stability and health condition, including their ability for adaptation to climatic fluctuations and environmental pollutions; providing additional means for their cultivation and improvement; utilization of the government funds for limiting the carbon and sulfuric oxides, as well as for activities directed towards improvement of the forest ecosystems health condition; increasing NFB’s technical institutional capacity and creating more specialized centers for performing monitoring, prophylactics and activities aimed at forest protection; developing and applying of a system for risk evaluation and control over the epiphytotics and withering of the main tree species; development of the forest inventory projects in relation with coordination between the planning process and the forests’ multifunctional management.

In the last few years the forest economy in Bulgaria has encountered a number of structural and economic changes. Changes of ownership offers significant opportunities for nature protection but it could also lead to ignoring the public interest. The cutting of old forests for economic purposes leads to irrevocable losses of habitats and destruction of unique ecosystems.

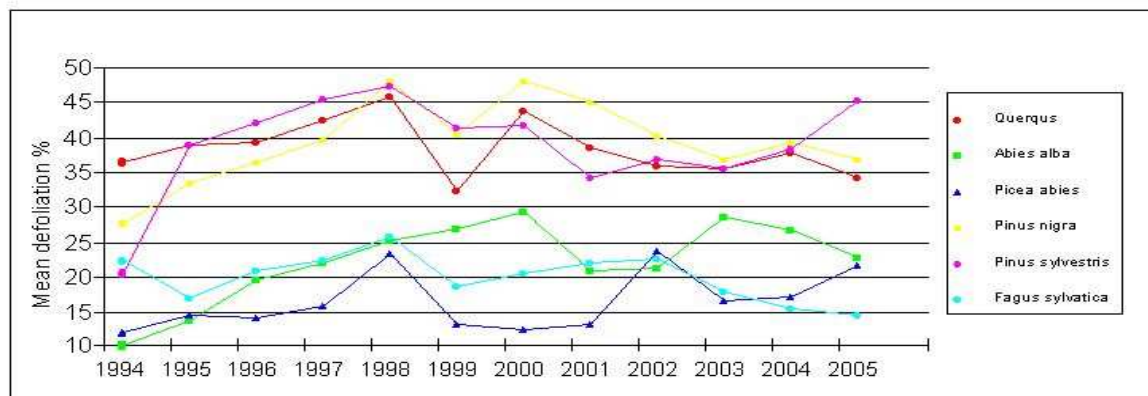
Sustainability of the forests is a priority of the national policy. A more effective system that balances the environmental and the economic interests shall respond best to the requirements of the society. In order to be sustainable, forest management needs information on the factors influencing forest condition. This is provided by the long-term, large scale monitoring of forests condition that has been carried out for 20 years in Bulgaria on 256 Level I plots in a grid net of 16x16 km, 8x8 km and 4x4 km. Since 2003, intensive monitoring is performed on 3 plots. The results are included in annual bulletins and reports on the state of the environment in Bulgaria. An efficient collaboration between the responsible Bulgarian governmental institutions and the national forest research community has been established. The University of Forestry and the Institute of Forests by Bulgarian Academy of Sciences are responsible for the research and the laboratory work go through the Program. It is charged by the Ministry of Environment and Waters and the Ministry of Agriculture and Forests .

The crown condition data for the period 1994-2005 show positive statistical trends for 53,25% of the observed trees. The regions with improvements, worsening and without changes in forest condition have been shown on the following map.



For this period *Fagus sylvatica* is the species in the best condition. An improvement also was registered in the condition of *Quercus* spp. Time series show again a rise in defoliation of *Pinus sylvestris* and *Picea abies* after their crown condition recovery in the last few years. *Abies alba* and *Pinus nigra* keep their obvious negative statistical trends.

fig. 3



In 2005, the forest condition survey was carried out at 139 plots on a grid net of 16 x 16 km, 8 x 8 km and 4 x 4 km. A total of 4 817 sample trees was assessed, 2 585 of them conifers and 2 232 broadleaves. For all species, there was a slight recovery of crown condition. The share of moderately to severely damaged trees (defoliation classes 2-4) decreased compared to the 2004 results. The share of trees without visible defoliation increased from 19.8% in 2004 to 22.4% in 2005.

For conifers, the percentage of damaged trees slightly increased. As compared to the previous year, trees without visible defoliation decreased by 5.2 percent points. The share of severely defoliated trees remained almost the same and that of dead trees increased by 1.3 percent points.

For *Abies alba*, *Picea abies* and *Pinus sylvestris*, some of the damages were caused by needle-rust, canker and root rot fungi including *Lophodermium pinostri*, *Genangium ferruginosum*, *Heterobasidion annosum* and *Armillaria mellea*.

Defoliation of broadleaves (*Quercus* spp. and *Fagus sylvatica*) was lower in 2005 as compared to 2004. The share of the trees without any defoliation increased by 10.7 percent points, compared to the 2004 results. The share of severely defoliated *Quercus* trees decreased. *Quercus* trees were attacked by defoliating insects including *Operophtera brumata* and pathogens such as *Nectria* spp., *Stereum rugosum* and *Hypoxylon mediterraneum*. Beech stands suffered under mining insects such as *Rhyngaenus fagi*.

Abiotic agents like weather extremes (snow, ice) and anthropogenic factors such as silvicultural operations at nearby trees were identified as damage causes. Nevertheless, no specific damage factor was observed for more than half of the trees.