



BULGARIAN ACADEMY OF SCIENCES
FOREST RESEARCH INSTITUTE



International Scientific Conference
90 Years Forest Research Institute -
for the Society and Nature
24-26 October 2018, Sofia, Bulgaria

BOOK OF ABSTRACTS

Co – organizers:

Ministry of Agriculture, Food and Forestry of Republic of Bulgaria
Union of Scientists in Bulgaria



90
YEARS

Forest Research Institute - BAS

1. Introduction and aim of the Conference

The conference is aiming at bringing together leading scientists, international experts and government representatives to network and share the latest research, programs and policies in the field of forestry, ecology and environmental studies.

The objective of the event is to link traditions and innovations in international and local experience with forest ecosystems, their resources, services, functioning and management for social well-being.

General topics:

- Forestry and Ecosystem Management
- Forests, Soil and Water Interactions
- Forests and Climate Change
- Silviculture and Forest Genetic Resources Management
- Forest Health
- Biodiversity, Ecosystem Services and Biological Invasions
- Forest Engineering
- Natural Resource Policy
- Forests and Interdisciplinary Research

Our honored plenary speakers:

Acad. Alexander Alexandrov, Director of FRI-BAS (1989-1993 and 2003-2011), IUFRO representative (Bulgaria) – „History of the Forest Research Institute – Bulgarian Academy of Sciences with a view to the 100th anniversary“.

Prof. John Innes, Faculty of Forestry, University of British Columbia (Canada) – „Forests and climate: How do we plan for what we do not know?“

Prof. Alain Roques, Institut national de la recherche agronomique, Orléans (France) – „Past insect invasions in Europe and future trends in relation with global change“.

Prof. Paolo Cherubini, WSL Swiss Federal Research Institute, Birmensdorf (Switzerland) – „Dendroecology: The use of tree rings in forest ecology to provide solutions to forest management“.

Prof. Gavriil Xanthopoulos, Institute of Mediterranean Forest Ecosystems (Greece) – „Preparing for forest fires in Mediterranean countries under Global Change scenarios“.

2. Conference program

24 October 2018

08.30 - 09.30 *Registration – Metropolitan Hotel, Sofia, Bulgaria*

24 October 2018 – Sofia Hall

09.30 - 10.00 *Opening and Welcome address*

Plenary session

- 10.00 - 10.25** ALEXANDER ALEXANDROV *"History of the Forest Research Institute - Bulgarian Academy of Sciences with a view to the 100th anniversary"*
- 10.25 - 10.50** JOHN INNES *"Forests and climate: How do we plan for what we do not know?"*
- 10.50 - 11.20** Coffee break
- 11.20 - 11.45** ALAIN ROQUES *"Past insect invasions in Europe and future trends in relation with global change"*
- 11.45 - 12.10** GAVRIIL XANTHOPOULOS *"Preparing for forest fires in Mediterranean countries under Global Change scenarios"*
- 12.10 - 12.35** PAOLO CHERUBINI *"Dendroecology: The use of tree rings in forest ecology to provide solutions to forest management"*
- 12.35 - 14.00** Lunch break

Preparing for forest fires in Mediterranean countries under Global Change scenarios

Gavriil Xanthopoulos

*Hellenic Agricultural Organization „Demeter“,
Institute of Mediterranean Forest Ecosystems, Greece*

Wildland fires are a natural phenomenon but they are also a significant natural hazard for modern societies. Their management is a very complex issue as it has many environmental, technical, social, financial, and political aspects, and involves three different but interlinked phases: prevention, suppression and post-fire rehabilitation. This complexity is even higher nowadays because the dynamics of fires are evolving as a result of climatological, social and political changes, financial and legal constraints, etc., all of them being part of what is referred to as „global change“. More specifically, meteorological changes, such as more and longer duration heat waves, intense droughts and changed global atmospheric circulation patterns, are likely to increase the number of days of extremely high fire danger and may even increase the maxima of observed fire danger indices. This is going to affect greatly the probability of fire starts and the aggressiveness of fire spread making firefighting extremely challenging and dangerous. Changes in fuels, due to inadequate forest management and abandoned rural territories, also contribute to more intense fires that are hard to stop because of increased fuel continuity. Development of wildland-urban interface areas, political instability, illegal immigration flows, and other current changes, also increase the potential for increasing fire starts, further compounding the problem of excessive fuel load to the fire suppression mechanisms.

Most Mediterranean countries already face such challenges and they must be prepared to react to save their forests and to ensure citizen safety. In order to achieve this, they need first of all to recognize the problem, and to understand the factors that affect it. Then they have to plan for a long, challenging future that cannot only depend on costly increases of firefighting resources. Integrated forest fire management, based on state-of-the-art knowledge from all fields of forest fire science, will be needed. Forestry, firefighting and civil protection agencies, as well as the general public, will need to receive training that will

make them able to participate effectively and efficiently in the new scheme that will put emphasis on prevention, improved policies, rational organizational schemes, and clever adoption of new knowledge and technologies.

Keywords: forest fires, forest fire management, fire prevention, global change, climate change

Dendroecology: The use of tree rings in forest ecology to provide solutions to forest management

Paolo Cherubini

WSL Swiss Federal Research Institute, Birmensdorf, Switzerland

Tree rings have a tremendous power for reconstructing environmental conditions. In temperate climates, cambial activity of trees stops during the cold season and annual tree rings are formed. Tree rings have been widely used for reconstructing past climate, and can be used as indicators of the environmental (not only climatic) conditions in which trees have been growing, because their characteristics depend on the environmental conditions in which they grew. In forest ecology, tree rings have been used to infer information about tree growth, and the impact of environmental factors on it at a given site. However, tree-ring width is influenced by many environmental factors, and its analysis and interpretation needs appropriate, scientifically sound, sampling strategies, currently, unfortunately, not yet well developed.

Within a forest stand, tree rings can provide information that may help forest management in taking decisions, such as when, and to what extent, do thinnings, i.e., remove trees to improve the growth rates and vigour of the remaining trees. In dense stands, trees are under competitive stress from their neighbors, and thinning may increase the resistance and resilience of the stand to disturbances such as insect infestation, fungal disease, wildfire, snow avalanche, windstorm or drought and frost. Reading tree rings in a proper way, tree and stand age can be determined with annual resolution. Past tree-growth trends, and abrupt decreases or releases after suppression can be identified, and information on the spatiotemporal occurrence of past disturbances (natu-