



**Interconnecting Forests,
Science and People**

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No# Title	56 Modern approaches in evaluating ozone impacts on forests
Main Organizer	Yasutomo Hoshika Institute for Sustainable Plant Protection, National Research Council of Italy, Sesto Fiorentino (FI)/Italy <i>hoshika0803@gmail.com</i>
Co-Organizer(s)	
Session description	<p>The impacts of air pollution and climate change on forest ecosystems have been a rising concern in the last decades. One of the major issue is tropospheric ozone (O₃). Controlled laboratory and field chambers have provided an immense database on tree responses to elevated O₃. However a difference of meteorological factors (especially temperature and wind speed) between chambers and natural conditions may change tree response to O₃ relative to actual field conditions. This session welcomes contribution on modern approaches for evaluating ozone impacts on forests, e.g. FACE systems, epidemiological or omics approaches. Similarly to free-air CO₂ enrichment, experiments by Free-Air Controlled Exposure of O₃ (O₃ FACE) can be considered a better approach to provide a realistic estimate of tree responses under real-world conditions. Similarly to studies on human health, epidemiological investigations may play an important role in the assessment of O₃ impacts on forests under field conditions. Transcriptional, proteomic and metabolite analyses are contributing new insights on the impact of this traditional pollutant on forests. This session aims at summarizing this novel knowledge, to improve the assessment of O₃ impacts on forests, now and in the future.</p>

No# Title	57 Invasive Alien Species and International Trade - Detection Prior to Introduction, Measures and Policy for Mitigation
Main Organizer	René Eschen CABI, Delémont/Switzerland <i>r.eschen@cabi.org</i>
Co-Organizer(s)	Andrea, Vannini, University of Tuscia Sankaran, K V, Kerala Forest Research Institute Steve, Woodward, University of Aberdeen Kenji, Fukuda, University of Tokyo Hugh, Evans, Forest Research, UK
Session description	The number of alien pests and pathogens of woody plants is rapidly rising in many parts of the world. In particular, but not only, wood packaging material and live plants have been identified as the cause of introduction of established tree pests and diseases. Increases in trade volume and intensity are likely to lead to a simultaneous increase in the introduction of such harmful organisms. As a consequence, there is an urgent need for research on this important pathway, the pests that may be introduced by it and measures and policy aimed at mitigating the risks. Sentinel plantings in the region of origin of traded plants to detect pests and pathogens provide information about likelihood of introduction and impact on plants native to the importing country that can be used to develop prevention and mitigation measures. This session will consist of oral and poster presentations on subjects relating to all types of harmful organisms endangering woody plants and forests. Moreover, in this session the sentinel planting concept and methods for pest and pathogen detection, identification and related risk evaluation will be discussed, and examples of this powerful tool will be presented.

No# Title	59 Responses to the increasing threat of insect pests to sustainable plantation forestry
Main Organizer	Brett Hurley University of Pretoria, Pretoria/South Africa <i>brett.hurley@up.ac.za</i>
Co-Organizer(s)	Manuela Branco, University of Lisbon, Portugal Bernard Slippers, University of Pretoria, South Africa
Session description	<p>Plantation forests provide a number of ecosystem services and reduce the pressure for wood resources from natural forests. However, the sustainability of plantation forests worldwide is threatened by the increasing prevalence and impact of insect pests driven both by climate change, which is influencing the geographical spread of many insect pests, and globalisation, which continues to facilitate the introduction and spread of alien invasive species. Responding to these threats will require the development and implementation of multiple and diverse approaches. Such a strategy requires a substantial investment in research, and thus its viability and success is largely dependant on strong international networks leading to the sharing of information, exchange of ideas, and development of collaborative projects.</p> <p>In the proposed session we aim to provide a platform for discussions on research and management responses to the increasing threat posed by insect pests to plantation forestry. We highlight recent developments in research and management approaches from pre-entry of invasive species to post-establishment monitoring and management. Specifically, we cover advances in pathway management, understanding diversity and routes of introduction, and early detection. We also examine recent developments in post-establishment strategies, including biological control and the use of semiochemicals, as well as progress towards a better understanding of the host-insect interactions. In addition, we provide case studies of the threats posed by insect pests and their management in some of the main plantation regions in the world. The session includes presentations from leading researchers across the globe, covering a broad range of research relevant to the session.</p>

No# Title	71 Early detection and monitoring of invasive forest pests and pathogens with citizen science
Main Organizer	Joseph Hulbert Forestry and Agricultural Biotechnology Institute, Pretoria/South Africa <i>joey.hulbert@fabi.up.ac.za</i>
Co-Organizer(s)	Roger, Coppock, Forestry Commission, United Kingdom Matteo, Garbelotto, UC Berkley, United Staes of America
Session description	Many citizen science programs exist to monitor and detect invasive forests pests. These programs incorporate 'many scientific eyes' and raise awareness about the consequences and risks of invasive species. Such programs can be designed and implemented as ecological tools that can mitigate the effects of invasive species and promote biodiversity conservation through several various citizen science models. This session will demonstrate the effectiveness and value of citizen science programs locally and regionally, calling upon a global initiative that is needed to address many of the key issues created by globalization.

No# Title	83 Are we doing the right things to deal with invasive forest pest and pathogens? Lessons from history and current strategies
Main Organizer	Caterina Villari University of Georgia, Athens, GA/USA <i>villari.2@osu.edu</i>
Co-Organizer(s)	Pierluigi, Bonello, Department of Plant Pathology, The Ohio State University Kamal, Gandhi, Warnell School of Forestry and Natural Resources, University of Georgia
Session description	<p>Invasions of forest ecosystems by non-native pest and pathogens have dramatically altered global forests for decades, often facilitated by disturbances due to a changing climate and expansive global trade. Management activities against alien species can target different stages of invasion progression, from prevention and early detection to biocontrol and deployment of host resistance.</p> <p>Despite some successful examples, in the majority of cases we are still unable to reduce the speed or severity of invasions and their negative impacts, which poses the question of whether we are doing the right things to deal with invasive forest pests and pathogens. The aim of the session we are proposing is to provide a critical overview of historical and current management strategies, and explore whether or how these strategies have been successful or not, and to discuss what future directions should be taken.</p> <p>We propose a series of oral presentations, followed by a separate, moderated discussion with session speakers to facilitate exchange of ideas and opinions on this critical topic. We believe that tackling this problem with a global perspective, through the participation of speakers with diverse expertise from around the world, would represent a valuable opportunity to begin coordinating and promoting an integrated response. Such integration and coordination are essential to preserve the long term value of resilient forests in the face of growing global biotic threats.</p>

No# Title	85 Sustaining Ecological Services and Preservation in an Era of Climate Change, Fragmenting Boundaries, and Intensifying Native & Invasive Disturbances
Main Organizer	Kenneth Raffa University of Wisconsin - Madison, Madison/USA <i>kfraffa@wisc.edu</i>
Co-Organizer(s)	Barbara J. Bentz (Division 7.03.00 Deputy) USDA Forest Service, Rocky Mountain Research Station, Logan UT, USA
Session description	<p>Trees provide a range of economic and ecological services along a continuum from highly managed urban sectors and commercial production systems, to landscapes dedicated primarily to conserving biodiversity, promoting wilderness experience and education, and facilitating carbon sequestration, watershed quality, soil health, and other ecological services. Historically the latter involved a largely hands-off approach, epitomized in wilderness areas and natural parks. But numerous anthropogenic forces exerted at regional and even global scales are rapidly blurring boundaries between such objectives, altering natural disturbance regimes, and raising the question of whether traditional approaches are still viable. Should our approach to forests dedicated largely to conservation be modified to contend with these challenges? Or would intervening undermine the very mission and essence of wilderness?</p> <p>Some of the over-arching questions we address are: 1) Can the philosophy of 'Let nature be nature' succeed in the era of climate change, fragmentation, and invasive species? Is it still viable in the anthropocene? 2) Do wilderness areas and national parks initiate outbreaks that subsequently impact forests managed for economic gain? 3) How should we approach disturbance interactions to promote resilience? 4) Should transgenic approaches be used to protect native trees from invasive pathogens and insects that threaten extirpation?</p> <p>This symposium directly addresses the Congress' Key questions Nos. 1, 2, and 4, and most importantly, inter-relationships among these critical issues. We propose 2.5 hrs. to allow ample time for questions and engaging post-presentation discussion.</p>

No# Title	86 The science of tree health and how we can use it: Multidisciplinary research from the Tree Health and Plant Biosecurity Initiative (THAPBI).
Main Organizer	Jill Thompson Centre for Ecology & Hydrology, Penicuik/UK <i>jtom@ceh.ac.uk</i>
Co-Organizer(s)	Stephen Cavers, Centre for Ecology & Hydrology Steven Woodward, University Aberdeen John Healey, Bangor University Laura Kelly, Queen Mary University of London Andrew Crowe, Fera UK
Session description	Worldwide, trees are increasingly at risk from the linked threats of climate change and the spread and evolution of pests and diseases. These biological invasions affect biodiversity and the landscape, cultural, economic and environmental value that trees provide is under threat. Policy decisions on how best to reduce the spread of pests and diseases, prevent and treat outbreaks, and manage forests to maximise their resilience requires a multidisciplinary approach. The UK's Tree Health and Plant Biosecurity Initiative (THAPBI) is a multi-donor research programme funded through Living with Environmental Change (LWEC) that aims to tackle many tree health issues. These include detection and transmission of disease and pests; infection and damage; genetics, adaptation and resilience; the impact of pests and diseases on forest ecosystem services; and treatment and management responses. Current major problems addressed by THAPBI include chalara ash die-back, dothistroma needle blight, acute oak decline, phytophthora diseases, Asian long-horn beetle, and pinetree lappet moth. Research also addresses public responses to the decline in tree health and increased tree mortality, how to change behaviours to reduce pest and disease spread, and forest management options. The proposed session will focus on new research findings from THAPBI, particularly those with general conclusions relevant to an international audience, and should be of broad interest to IUFRO delegates.

No# Title	120 Insect pests and pathogens of tree reproductive structures in a changing world: assessing vulnerability and mitigation strategies
Main Organizer	Jean-Noel Candau Canadian Forest Service, Sault Ste Marie, Ontario/Canada <i>Jean-Noel.Candau@Canada.ca</i>
Co-Organizer(s)	Thomas, Boivin, Institut National de la Recherche Agronomique (INRA) - France
Session description	Seed losses due to insect and pathogen damage to buds, flowers, cones or seeds can influence the population dynamics of individual tree species, hinder genetic improvement programs and reforestation projects. While recent studies show that large scale patterns of seed pre-dispersal mortality may be highly sensitive to global changes such as climate change, habitat modifications and increase global trade in plant material, more information is needed to assess the vulnerability of natural and managed forest ecosystems to changes in seed predators abundance and diversity. This session will discuss recent advances in cone and seed insect and pathogen research and their impact on forest natural regeneration and seed orchards management in the context of global change. A special focus will be given to assessing vulnerability and mitigation strategies. Topics will also include the biology/ecology of a specific species or a group of species, invasive species, novel monitoring techniques and pest management.

No# Title	122 Invasive species surveillance: New methods and tools for survey and early detection
Main Organizer	Jon Sweeney Canadian Forest Service, Fredericton/Canada <i>jon.sweeney@canada.ca</i>
Co-Organizer(s)	Davide Rassati, University of Padua
Session description	This session will contribute to the IUFRO Congress theme: “How can biodiversity loss and biological invasions be effectively addressed?” Early detection of established exotic and potentially invasive species is critical for their successful eradication, containment or management. Yet, too often invasive species are discovered several years after their initial establishment. This session will feature recent research and advances in tools and strategies designed to improve the effectiveness of invasive species surveillance and early detection, with an emphasis on practical applications that might be adopted for operational use by regulatory agencies.

No# Title	136 Hierarchical modelling framework to quantify and forecast climate change and air pollution impacts on forest ecosystems
Main Organizer	Alessandra De Marco ENEA, Rome/Italy <i>alessandra.demarco@enea.it</i>
Co-Organizer(s)	Pierre, Sicard, ACRI-HE
Session description	<p>Forest ecosystems face increasing and emerging threats, including resurgence of diseases and pests, climate and land use changes, air pollution, and the synergistic effects of these combined challenges affecting the sustainable management of forests and other natural and semi-natural ecosystems. Climate change and associated environmental stresses have dramatic effects on plant species distributions, plant community composition and diversity, vegetation structure and ecosystem processing of carbon, nutrients and water. The combined effects of stressors may significantly differ from the sum of the separate effects. Reliable quantitative predictions of future climate and air pollutant scenarios, and associated impacts on ecosystems, are urgently required for risk assessment of high biodiversity forest ecosystems (e.g. tropical, Mediterranean) and under-investigated areas of the world (e.g. Africa, South America, Asia). In field surveys are expected to provide field validation to models and reduce the uncertainties in the estimates of the effects of stresses induced by air pollution and climate change on vegetation. To develop climate change adaptation strategies, climate and air pollution models could be harmonized, coupled and further developed to perform high resolution simulations with a detailed representation of emissions of the main greenhouse gases, nitrogen, sulfur, ammoniac, biogenic volatile organic compounds, aerosols and tropospheric ozone and deposition, and vegetation distribution.</p> <p>This session is designed to meet the multi-faceted forest health challenge by combining new experts and approaches (e.g. modelling, in-field surveys, space observations) to i) develop hierarchical modelling framework to quantify and forecast climate change impacts on forest health indicators and to ii) guide management decisions and efficient policy recommendations toward increased health, sustainability and productivity forest resilience worldwide. The session outputs will enable: i) a precise understanding of their impacts on society, and ii) a spatio-temporal monitoring to facilitate early detection of forest health threats, intervention and adaptive silviculture.</p>

No# Title	146 Climate change and air pollution impacts on forest health status and productivity
Main Organizer	Algirdas Augustaitis Aleksandras Stulginskis University, Kaunas/Lithuania <i>algirdas.augustaitis@asu.lt</i>
Co-Organizer(s)	Ovidiu Badea, National Institute for Research and Development in Forestry "Marin Dracea" – INCDS. Romania. IUFRO WG 7.01.01
Session description	<p>Climate change and environmental pollution accompanied by various biotic and abiotic factors that cause the decline of forest ecosystems are characterized by more intense changes in forests than those of natural forest adaptation processes. Unpredictably, the occurring episodes of high air temperature followed by the changes in humidity regime have become one of the key factors affecting forest condition. Climate change affects distribution and deposition of the air pollutants resulting in the altered air quality, and vice versa, air pollutants can modify responses of ecosystems to specific impacts of meteorological conditions and climate in general. Changes in atmospheric circulation reduce seasonal climatic amplitudes, but enhance air pollution presumably tropospheric ozone, acidification (NO_x) and biogenic volatile organic compounds (BVOC) which will affect tree growth and ecosystem performance. Effects of these contaminants could be reinforced by means of inadequate forestry treatments or invasions of forest pests and diseases. Therefore recent changes in forest functionality and productivity are the results of multiple and cumulative interactions between these stress factors and changes in land use and poor management practices. Well-designed and long-term forest health monitoring and assessment efforts are critical given the potential impacts of these threats. It is the best way to offer common scientific knowledge and understand how the forests will be capable of adapting to present and future environmental conditions and what forestry treatments are needed to increase their resilience to climatic changes sequestering air carbon. Therefore the main objective of the proposed session is to focus on the knowledge gaps mainly from a perspective of new technologies and information on integrated effect of climate change, air pollution, forestry treatments and invasion of forest pests and diseases on forest sustainability.</p>

No# Title	161 Combined and interactive effects of multiple stressors on forest health
Main Organizer	Elena Paoletti SISEF, Sesto Fiorentino/Italy <i>elena.paoletti@cnr.it</i>
Co-Organizer(s)	Mikhail Kozlov, WP7.01.07 C, University of Turku, Finland
Session description	This session is organized within the IUFRO WP 7.01.07 and aims at advancing the knowledge on how the jointly acting stressors, both natural and human-induced, affect forest health. The primary goals of the session are (1) to provide an expert's assessment of the relative importance of different stressors for forest ecosystems in different biomes and at different timescales; (2) to stress the importance of studying joint actions of multiple stressors on forest ecosystems for understanding and predicting changes in structure and functions of these ecosystems under different climate change scenarios; (3) to demonstrate the variety of interactions among the stressors; (4) to identify the gaps in knowledge and to discuss methodological aspects of exploring combined and interactive effects of multiple stressors on forest health by using monitoring data and by designing dedicated experiments; and (5) to establish links with ecosystem modelers in order to facilitate incorporation of the identified interactive effects of various stressors into ecosystem models. It is expected that a group of contributors to this session will jointly prepare a position paper for publication in a high-rank ecological or environmental journal.

No# Title	165 Dothistroma and other needle diseases of pine
Main Organizer	Rosie Bradshaw Massey University, Palmerston North/New Zealand <i>r.e.bradshaw@massey.ac.nz</i>
Co-Organizer(s)	Irene Barnes, Forestry and Agriculture Biotechnology Institute, University of Pretoria, South Africa
Session description	<p>Dothistroma needle blight (DNB) is one of the most serious diseases that currently affects pine species worldwide. Disease symptoms are characterised by red-coloured necrotic lesions containing black fruiting bodies of either <i>Dothistroma septosporum</i> or <i>D. pini</i> fungi. Necrotic needles are cast, leading to reduced growth or even death of trees. Recent changes in climate, and the abundant availability of susceptible hosts, have lead to a succession of devastating DNB epidemics throughout mainland Europe, the Baltics, parts of North America and Colombia in the last decade.</p> <p>The upsurge in disease incidence and severity, and increased distribution of the pathogen, initiated an intense interest to investigate the disease epidemiology and the pathogens responsible. This motivated the formation of a global collaboration of scientists through the European COST Action FP1102: DIAROD: Determining Invasiveness And Risk Of Dothistroma (http://www.cost.eu/domains_actions/fps/Actions/FP1102). The COST Action ran from 2011 – 2015, included co-operation among 160 scientists from 41 countries, and aimed to assemble knowledge, encourage collaborative research and address questions pertaining to many aspects of Dothistroma research.</p> <p>This very successful COST Action culminated in a series of reviews and original research articles in a special issue of Forest Pathology on Dothistroma (due for publication in 2016). This very timely session will provide an opportunity to encourage Dothistroma researchers from around the world to attend IUFRO to profile the work of the group and highlight the international co-operations achieved. Specific aspects of forest pathology that are relevant to many forest diseases will be covered in the talks, including: origins and dispersal, management and control, geographic distribution and host susceptibility, host resistance mechanisms and variability. In addition, unpublished work will also be presented that highlights new findings in pathogen genomics and population genetics. We anticipate the session will be of broad interest to anyone studying foliar diseases of pine.</p>

No# Title	167 Ecosystems, climate change and hydrology
Main Organizer	YUSUF Serengil Istanbul University, Istanbul/Turkey <i>serengil@istanbul.edu.tr</i>
Co-Organizer(s)	Latif Kalin, Auburn University
Session description	<p>The role of ecosystems in adapting to climate change has been emphasized by numerous scientific studies and also the policy documents including UN Sustainable Development Goals and the new climate agreement. With these we presume that more projects that consider ecosystems integrity and adaptation while storing carbon will be incentivized in the near future. Besides, it is already very well documented that water is a key variable of adaptation to changing climatic conditions. IUFRO underlined the importance of forest-water interaction and climate change with the 2015-2019 strategy document.</p> <p>In this session we invite scientists all around the globe to share their latest scientific results on ecosystems-water interaction to enable a geographically balanced vision. The scope is not limited to forests. Studies on other ecosystems including rangelands, wetlands, shrublands etc will be welcome.</p> <p>The chairs of the session plan to publish high level papers at respected journals after the conference</p>

No# Title	170 Understanding viruses in trees - promoting healthy plants in forest and urban open space
Main Organizer	Carmen Büttner Humboldt-Universität zu Berlin, Berlin/Germany <i>carmen.buettner@agrar.hu-berlin.de</i>
Co-Organizer(s)	Risto Jalkanen, Natural Resources Institute Finland (Luke) Rovaniemi Unit, FI-96301 ROVANIEMI
Session description	<p>Only few studies have been conducted on viruses of forest and urban trees, however, according to our observations over many years, these trees exhibit symptoms from virus infections as much as other crop and wild plants. Plant viruses act as predisposing factor to other infectious agents or damaging factors that harm the health status of their host. The following questions are raised here:</p> <ul style="list-style-type: none"> - Detection of plant viruses in deciduous forest trees - Discovery of new viruses - Impact of plant viruses on tree growth and usability in means of livelihood of future generations, greening functions as urban lung and recreational function - Management and certification - Impact of plant viruses in the context of the hologenome concept which considers the plant with all its associated microorganisms as a unit of selection in evolution. Thus, does plant viruses provoke or contribute to a loss of biodiversity of trees species, subspecies and taxa

No# Title	177 Forest Health in a Changing Climate
Main Organizer	Christopher Fettig USDA Forest Service, Davis, California/USA <i>cfettig@fs.fed.us</i>
Co-Organizer(s)	Horst E. Delb, Chair, Department of Forest Protection, Forest Research Institute of Baden-Württemberg, Freiburg im Breisgau
Session description	<p>Forests cover ~42 million km² of the earth's surface, and are found in all regions at elevations and latitudes capable of sustaining tree growth, except where disturbances, whether natural or human-induced, are too frequent and/or too severe to enable establishment. Forests provide immeasurable ecological, economic and social goods and services. These include, among others, purification of the air that we breathe; regulation of edaphic formation and control of runoff and soil erosion; provision of fish and wildlife habitat; provision of food, medicine, shelter and water; provision of wood and other forest products; provision of aesthetics, outdoor recreation and spiritual renewal; and regulation of climate through carbon storage and complex physical, chemical and biological processes that affect planetary energetics. In short, forests represent one of the earth's most important ecosystems, and are critical to the health, welfare and survival of human societies. While healthy forests have the potential to assimilate, accumulate and sequester large amounts of carbon from the atmosphere, thus reducing one of the primary drivers of climate change, many forests are increasingly threatened by large-scale disturbances. This session explores the science of climate change, the impacts of climate change on forest disturbances, and options for increasing forest resistance and resilience.</p>

No# Title	188 Managing pests and diseases in commercial plantations
Main Organizer	Beccy Ganley Scion, Rotorua/New Zealand <i>Beccy.Ganley@scionresearch.com</i>
Co-Organizer(s)	Working Party 7.02.13 deputies: Rodrigo Ahumada, Arauco Carlos Perez, Universidad de la República Angus Carnegie, NSW Department of Primary Industries
Session description	We would invite any talks that focus on the management or control of pests and diseases in commercial forest plantations, as well as talks on climate change effects and interactions on pests and diseases outbreaks. Commercial forestry of hardwood and softwood species is an important industry for many countries. Managing and controlling pests and diseases that impact commercial forests is critical if these forest resources are going to be used to improve people's lives or contribute to the broad range of ecological benefits they provide, including carbon sequestration, the emerging bio-economy and improving water quality.

No# Title	191 Nitrogen deposition: spatial-temporal change and ecological impacts
Main Organizer	Enzai Du Beijing Normal University, Beijing/China <i>enzaidu@bnu.edu.cn</i>
Co-Organizer(s)	Mark Fenn, USDA, Forest Service; Viktor Bruckman, Austrian Academy of Sciences; Maliwan Haruthaithanasan, Kasetsart University
Session description	<p>Atmospheric nitrogen deposition has been greatly altered by anthropogenic emissions and has aroused various concerns regarding its consequent impacts. Nitrogen deposition, particularly in oxidized forms, has recently decreased in European countries and the U.S., while it is increasing rapidly in other countries with burgeoning populations and economies (e.g., China and India). Forests contribute more than half of terrestrial primary production and more than 90% of the global land carbon sinks. Therefore, it is important to understand how changing atmospheric nitrogen deposition alters forest ecosystem structure and function. This is crucial to improve the ecological resiliency of natural and planted forests, and to better guide management options. This session will focus on spatial-temporal changes in nitrogen deposition and its ecological impacts through a variety of monitoring, modeling and experimentation efforts. The aim is to provide opportunities for knowledge exchange and discussion on current challenges and future research efforts on nitrogen deposition with the perspective of maintaining the sustainability of forest ecosystems in the face of environmental change. A perspective paper highlighting recent research and future challenges for nitrogen issues in forest ecosystems will be published as a result of this session.</p>

No# Title	192 Global decline of Fraxinus species caused by invasive pests and pathogens
Main Organizer	Michelle Cleary Swedish University of Agricultural Sciences, Alnarp/Sweden <i>Michelle.Cleary@slu.se</i>
Co-Organizer(s)	
Session description	<p>Healthy forests, which are essential for ecological, economic and social benefits, are under increasing threats due to the introduction of alien invasive species. Following a host jump and successful establishment to a new ecological niche that supports effective reproduction, invasive pests and pathogens can spread and intensify on a host tree population that offers little natural resistance. In Europe, the introduced ascomycete pathogen <i>Hymenoscyphus fraxineus</i> has been causing large-scale dieback and mortality of native <i>Fraxinus</i> species (and also serious damage to North American <i>Fraxinus</i> planted within Europe). In eastern North America, many species belonging to the genus <i>Fraxinus</i> (ash) have been abolished by emerald ash borer (EAB) <i>Agrilus planipennis</i> following its recent introduction. EAB is now a growing threat to <i>F. excelsior</i> in Europe with a newly established infestation in Western Russia (on the eastern edge of <i>F. excelsior</i>'s distribution range). This session will focus on these two introduced, alien invasive species which are contributing to the global decline of <i>Fraxinus</i> species. The theme of the session will focus on forest restoration/resilience and efforts that will help to ensure the future existence of <i>Fraxinus</i> species in our forests, cities and landscapes. Session topics shall include disease control, tree resistance, host-parasite interactions, breeding efforts and forest pest incursion management.</p>

No# Title	198 Forest biodiversity and resistance to natural disturbances
Main Organizer	Herve JACTEL INRA, Cestas/France <i>herve.jactel@pierroton.inra.fr</i>
Co-Organizer(s)	Eckehard, Brockerhoff, SCION, New Zealand
Session description	It is now widely acknowledged that biodiversity provides many ecosystem services, i.e. the benefits human populations can derive from ecosystem structures and functions. One main ecosystem service category is the regulation of biological conditions which includes ecosystem resistance to pests, pathogens, invasive species, storms, drought and more generally natural disturbances. However most evidence supporting the diversity - resistance hypothesis have been so far documented in grasslands. The IUFRO all division 7 meeting in Freiburg offers an unique opportunity to gather information from Research Groups on forest pathology, entomology and impacts of climate change about the effect of tree diversity on forest health in the broadest sense of the term.

No# Title	199 Effects of global change on Mediterranean forest insects and interactions with pathogens
Main Organizer	Francois Lieutier University of Orleans, Orleans Cedex 2/France <i>francois.lieutier@univ-orleans.fr</i>
Co-Organizer(s)	Timothy D. Paine, University of California, Riverside, USA, Mohamed L. BenJamâa, INRGREF, Ariana, Tunisia
Session description	(This session was part of the cancelled IUFRO meeting in Istanbul) The present Mediterranean forest ecosystems are the result of millennia of human action under a special climate. Global change will act through both climate and social factors, which will thus have important consequences for the functioning of Mediterranean forest ecosystems. Insects, fungi and other microorganisms are essential components of forest ecosystems. While focusing on effects of climate and social factors on Mediterranean forest insects, and their relations with trees and pathogens, the session will consider an essential level of the effect of global change on Mediterranean forest ecosystems.

No# Title	208 Social and Economic dimensions of forest health: Contributing to a biosecure future
Main Organizer	Mariella Marzano Forest Research, Roslin/UK <i>mariella.marzano@forestry.gsi.gov.uk</i>
Co-Organizer(s)	Carina, Keskitalo, Professor, UMEA Robert, Haight, USDA Holmes, Tom, USDA
Session description	<p>The increased biosecurity threat to trees, woods and forests from pests and pathogens has been strongly linked to the continuing expansion of international trade (e.g. live plants, wood packaging material) and tourism, as well as improvements in modes of transport. Preventing, limiting and/or managing outbreaks and invasions of tree pests and pathogens require actions from a wide range of actors involved - from growers, traders, transporters and quarantine officers through to sellers, consumers and countryside visitors. Many factors affect these actions, including stakeholder values, motivations and risk perceptions, as well as the regulative and economic frameworks within which this very wide spectrum of actors operate. Understanding these factors is key to any future attempts to improve biosecurity through prevention, detection, control (mitigation) and adaptation. This panel aims to address fundamental questions around how to prevent new introductions and more effectively manage outbreaks, along with improving societal involvement in biosecurity through awareness-raising and changes in current practices. We encourage current international research and/or lessons learned that can contribute to our understanding of the social and economic dimensions of forest health including (but not limited to): Governance frameworks and biosecurity practices; stakeholder knowledge, values and behaviour and implications for forest health; quantifying effects of tree pests and diseases on market and non-market benefits; benefits and costs of risk reduction methods; evaluation of risk communication and engagement approaches</p>

No# Title	300 Pine pitch canker - strategies for management of <i>Gibberella circinata</i> in greenhouses and forests (PINESTRENGTH)
Main Organizer	Julio J. Diez University of Valladolid, Palencia/Spain jdcasero@pvs.uva.es
Co-Organizer(s)	COST-EU
Session description	<i>Fusarium circinatum</i> (teleomorph: <i>Gibberella circinata</i>) was first detected in North America, since when the pathogen has spread into Central and South America, South Africa, Asia and, more recently, Europe. <i>F. circinatum</i> is now considered the most important pathogen affecting <i>Pinus</i> seedlings and mature trees in many countries globally; asymptomatic seedlings may be planted out, resulting in very serious losses in forests.

No# Title	305 Pine wilt disease: progress in understanding the dynamics and developing control measures
Main Organizer	Christelle Robinet INRA Val de Loire, Orléans/France <i>christelle.robinet@inra.fr</i>
Co-Organizer(s)	Luis Bonifácio (Portugal) Hyerim Han (Korea) Katsunori Nakamura-Matori (Japan)
Session description	The pine wood nematode (PWN), <i>Bursaphelenchus xylophilus</i> , is an invasive organism native to North America which causes huge damage in pine forests in eastern Asian countries (Japan, China, Korea and Taiwan) and Europe (Portugal and more recently Spain) where it was accidentally introduced. The PWN is carried by native insects of the genus <i>Monochamus</i> . Once inoculated by the insect to the pine during maturation feeding or oviposition, the PWN can develop and cause the wilt of pine needles and the tree death within a few weeks if environmental conditions are favorable to the disease expression. Some measures are applied to prevent further invasions, to detect new infestations, to eradicate local populations, and to limit population spread. However, controlling the pine wilt disease is very difficult. This session consists of oral communications and posters presenting the disease situation and the latest research progresses in understanding the nematode pathogenicity and effects on the tree hosts, interaction with insect-vector, disease spread dynamics and management.

For scientific inquiries, please contact

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