

IUFRO



SPOTLIGHT

International Union of Forest Research Organizations

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IUFRO Spotlight is an initiative of the International Union of Forest Research Organizations. Its aim is to introduce, in a timely fashion, significant findings in forest research from IUFRO officeholders and member organizations to a worldwide network of decision makers, policy makers and researchers. IUFRO will encapsulate, and distribute in plain language, brief, topical and policy-relevant highlights of those findings, along with information on where/how to access the full documents.

IUFRO Spotlight also aims to present activities such as sessions at major IUFRO congresses or the work of IUFRO Task Forces with a focus on emerging key issues that are of great interest to policy makers and groups inside and outside the forest sector, and contribute to international processes and activities. The IUFRO Spotlight findings will be distributed in a periodic series of emails as well as blog postings.

IUFRO Spotlight #38 / July 2016

Climate Change and Invasive Alien Species Worsen Outlook for Forest Health

As global trade has expanded, there has also been an accompanying increase in invasions of insects and pathogens into areas where they never before existed.

In many cases these invasions have caused significant forest damage, negative economic impacts and loss of forest ecosystem services.

Meanwhile, climate change is affecting the geographic distribution of host trees and their associated insects and pathogens. Increased pest impacts – both native and alien – can be expected.

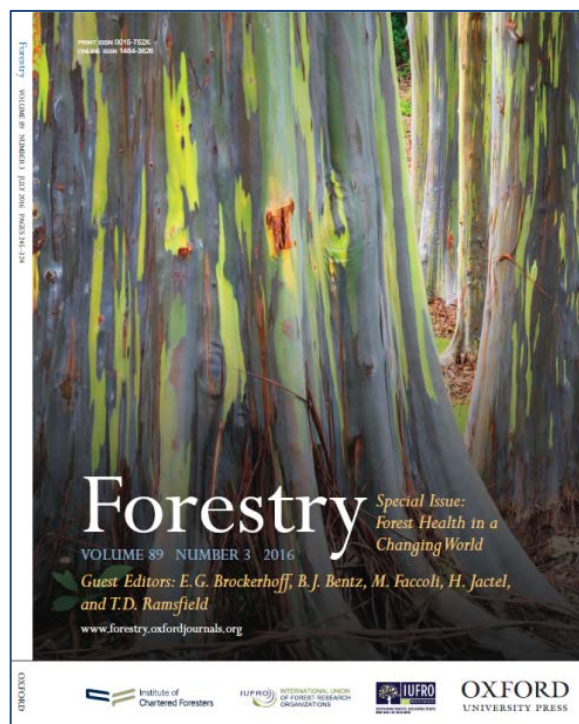
“Each of those subjects – invasive alien species, trade, and climate change – is, in isolation, important to forest health. But in combination, the impacts are likely to be even more serious”, said IUFRO’s Forest Health Division Coordinator Dr. Eckehard Brockerhoff of Scion (the New Zealand Forest Research Institute).

Dr. Brockerhoff and Dr. Tod Ramsfield of the Canadian Forest Service, Natural Resources Canada, along with Drs. Barbara Bentz of the United States Forest Service, Massimo Faccoli of the University of Padua, and Hervé Jactel of INRA, France, coordinated a special issue of *Forestry* published by Oxford University Press.

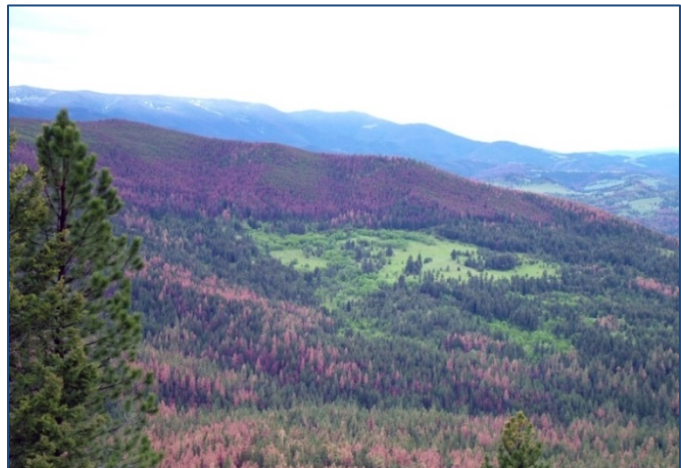
Eight of the nine papers in the special issue were initially presented at the IUFRO World Congress in Salt Lake City, Utah, in 2014, but the issues they raise are becoming increasingly relevant worldwide.

The articles point out the complex and multifaceted impacts of invasive species. Individually, the threats posed to forest ecosystems by invasive pests are serious. So, too, are the threats posed by climate.

At this point, interactions among climate change, native pests, invasive aliens and their outcomes are poorly understood and, therefore, difficult to predict. But it seems clear that the cumulative impacts on forest ecosystems will be exacerbated.



For example, we are already seeing the combined effects of invasive species and climate change in the forests of North America where outbreaks of bark beetles and the spread of tree-killing invasive pests and pathogens (such as emerald ash borer and *Phytophthora* pathogens) are transforming forest ecosystems everywhere. Within the special issue the article by Morin and Liebhold is focused on the impact of gypsy moth on oak populations, but the authors note that the impact of gypsy moth is but one of several factors that affect oak regeneration.



“It can be difficult enough to predict how an invasive species will behave in a new territory. Then, when you add climate change to that, it can become even more challenging,” Dr. Brockerhoff said.

“In western North America, mountain pine beetle outbreaks killed millions of trees across vast areas of pine forests, with an impact even greater than that of wildfire. Climate change has contributed to the size and severity of these unprecedented outbreaks. Photo by Barbara Bentz (from Ramsfield et al. (2016), also see Bentz et al. in the same issue).”

“While most policy makers are aware of the threats posed by these factors, this special issue underlines the importance of also considering their cumulative effects on a basis of sound science,” he said.

The special issue includes articles that illustrate the impacts of invasions of insects and pathogens, climate change, forest management and their interactions, as well as presenting methods to predict, assess and mitigate these impacts.

In combination, the papers included in the special issue now present the scientific evidence of the multiple impacts on forest health in a more fulsome manner and so provides further evidence for policy makers and their advisors to consider.

IUFRO has nine scientific Divisions. The [Forest Health Division \(Division 7\)](#) includes research on: physiological and genetic interactions between trees and harmful biotic impacts, including resistance mechanisms; biological and applied aspects of tree diseases; environment/pathogen interactions in forest decline; the biology and control of forest tree insects; and impacts of air pollution on forest trees and forest ecosystems, including diagnosis, monitoring, biology, genetics and treatment of polluted forests and other wooded lands. In 2015 IUFRO also established an interdisciplinary [Task Force on Forests and Biological Invasions](#).

*The special issue of **Forestry** can be found at: <http://forestry.oxfordjournals.org/content/89/3.toc>*

*Ramsfield TD, Bentz BJ, Faccoli M, Jactel H, Brockerhoff EG (2016) Forest health in a changing world: Effects of globalization and climate change on forest insect and pathogen impacts. *Forestry* 89, 245–252. doi:10.1093/forestry/cpw018*

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Suggestions for reports and findings that could be promoted through IUFRO Spotlight are encouraged. To be considered, reports should be fresh, have policy implications and be applicable to more than one country. If you would like to have a publication highlighted by Spotlight, contact: Gerda Wolfrum, IUFRO Communications Coordinator, [wolfrum\(at\)iufro.org](mailto:wolfrum@iufro.org)

The International Union of Forest Research Organizations (IUFRO) is the only worldwide organization devoted to forest research and related sciences. Its members are research institutions, universities, and individual scientists as well as decision-making authorities and other stakeholders with a focus on forests and trees. Visit: <http://www.iufro.org/>

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