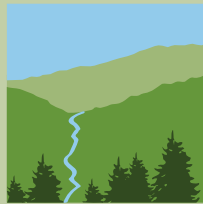


# **Invasive Pests and the Future of New England Forests and Forest Products**

**A Hubbard Brook Roundtable**

**Held February 7, 2019 at the  
Hubbard Brook Experimental Forest**

HUBBARD  
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RESEARCH  
FOUNDATION

**Roundtable Summary Report  
June 6, 2019**

## Background

On February 7, 2019, the Hubbard Brook Research Foundation hosted 21 participants at the Hubbard Brook Experimental Forest for a roundtable dialogue to explore possible options for addressing the problem of imported invasive forest pests in ways that minimize negative impact on the forest-based economy in New England. Roundtable participants included landowners, foresters, pallet manufacturers, conservation practitioners, researchers, and staff of state and federal agencies. The goals in convening this meeting were to:

- (1) provide an opportunity to discuss the current science about invasive pests in the Northeast;
- (2) to understand the pressures on the wood products industry; and
- (3) to share perspectives and knowledge across sectors for more collaborative and informed science, policy, and practice.

Preparation for the roundtable included pre-meeting interviews with 15 of the participants to discuss the challenges of invasive forest pests and diseases, the role of the wood products industry in prevention and management, and advice for how best to design the meeting.

The stimulus for this roundtable arose from recent work from the Cary Institute of Ecosystem Studies and the Science Policy Exchange to synthesize the state of knowledge about the ecological and economic impacts of imported forest insects and diseases in the U.S.<sup>1</sup> The Science Policy Exchange is a consortium of research institutions and Long Term Ecological Research programs that are dedicated to increasing the influence of science on environmental policy, conservation, and natural resource management.

## Expectations

### *Participants shared their expectations for the workshop.*

- Increase communication and connection across participants and sectors
- Learn more about the issue and different perspectives on it
- Learn more about current research
- Look at the issue from the supply (forests) to the end (infestation of pests)
- Identify policy solutions that work
- Create a compelling coalition for change
- Identify areas of agreement as well as difference

## What is the Problem?

Invasive forest pests are a continuous challenge to forests and people in the northeastern United States. The chestnut blight wiped out nearly all mature stands of the American chestnut early in the 20<sup>th</sup> century. Dutch elm disease decimated streetscapes across the eastern United States. The hemlock woolly adelgid is moving northward, harming eastern hemlock stands. With the emerald ash borer, the Asian long-horned beetle, and others, the threats are mounting.

- Imported forest pests are the most urgent and under-appreciated forest health threat in the U.S. Wood-boring beetles are perhaps the greatest threat to street trees in municipalities and the wood products industry.
- This is a growing problem that affects forests and communities in all 50 states. The Northeast, upper Midwest, and California face the greatest number of pests, with New York state topping the list of number of infestations.
- Economic impacts are substantial and fall mostly on homeowners and municipalities. It's estimated that municipalities lose \$2 billion annually and homeowners \$2.5 billion annually due to imported insect pests.
- Ecological impacts are severe and can be long-term. In addition to human costs, the ecological impacts of invasive pests include death of trees and the habitat they provide, decline of some bird species, change in the forest structure and composition, increasing stream temperatures and loss of fish habitat, disruption of forest nutrient cycles, and diminished forest carbon storage.
- Wood-boring invasive pests enter the U.S. on imported goods and their solid wood packaging materials, typically but not always, wood pallets, usually produced overseas. Some 25 million shipping containers come into the U.S. every year, at numerous ports on both coasts, with approximately 13 million of those containers containing solid wood packaging material.
- While most of the pests imported into the U.S. come from temperate forests in Europe and Asia, trading partners in temperate regions can use wood derived from a variety of sources. Even wood derived from tropical or subtropical regions can pose a threat to trees in warmer areas of the U.S.
- The powerful driver underlying the unintentional importation of invasive pests is the very human enterprise of rapidly expanding global trade in pursuit of profit, low-cost consumer goods, and international business competition.



A paper by Robert Haack et al. in 2014 compared the insect infestation rates in SWPM from shipments imported into the U.S. before and after the implementation of the ISPM-15 regulations. The study found that the regulations decreased the infestation rates by 36-52% depending on the assumptions used in the analysis. Infestation rates post-ISPM15 were about 0.1%, meaning only about 1 SWPM-bearing shipment in 1,000 was infested. However, because of the high volume of imports, the authors estimated that about 13,000 infested shipments enter the country each year. The authors listed four possible reasons why the ISPM-15 regulations, which were intended to eliminate pests in SWPM, are not 100% effective:

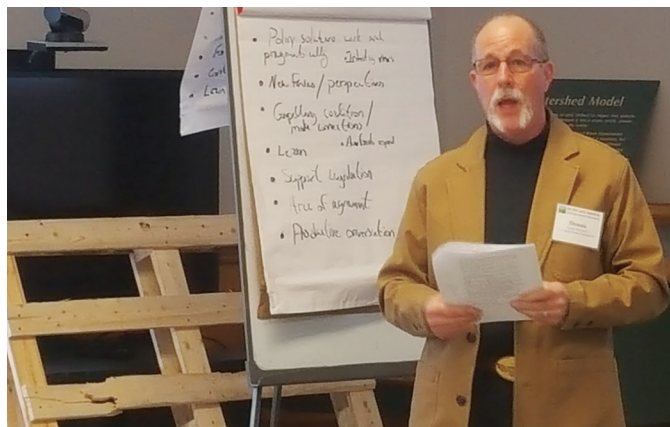
- (1) the treatment protocols themselves might not be sufficient,
- (2) the treatments may not be applied correctly,
- (3) SWPM may be re-infested after treatment, or
- (4) untreated SWPM may be fraudulently stamped.

Those alternatives were discussed in the paper but the data in the study did not allow the authors to distinguish among them.<sup>3</sup> The Leung study mentioned above also concluded that because ISPM-15 is only partially effective, continuing to use this standard without additional actions may allow up to a tripling of the number of wood boring pests in the U.S. by 2050.

## What is the Role of Wood Pallets in the U.S. Forest Economy?

Wood pallets have a number of advantages, including:

- (1) abundant supply of raw materials;
- (2) inexpensive to produce;
- (3) can be recycled or reused;



*Dennis McKenney from New England Forestry Consultants talking about the role of pallets in the forest economy in New England.*

- (4) sturdy and provide a basic shipping tool used world-wide across most product markets;
- (5) provide an important market for low-grade wood, which helps ensure the profitability of forest management for wood production.

Wood packaging is a key component of the wood product supply chain in the United States. It is estimated that 40 percent of U.S. hardwood production goes to pallets. Lower grade wood in the U.S. market is destined for: pallet manufacturing, pulp for paper production, or wood chips for biomass fuel. It is estimated that, for every thousand board feet of sawlogs harvested, 8 tons of low-quality wood was also harvested. Every tree or log has some percentage of “low grade” wood destined for the lower end of the wood products market. Pallet production consumes billions of board feet every year, including both hard and soft woods. Pallet manufacture is a key and integral part of the forest economy. Without it, billions of board feet and their related dollars would be stranded or would need to find another market.

It is estimated that pallet production has grown rapidly with trade, but as more pallets have been produced, a greater percentage are recovered in some way. In 1992, some 347 million new pallets were produced and only 51 million were recovered to be reused. By 2006, some 441 million new pallets were produced, but 357 million pallets were recovered. Sixty-eight percent of recovered pallets are used once repaired, 10 percent are reused without repair, 15 percent are unnailed and used for other purposes, and less than 7 percent are chipped, ground, or landfilled. Of the new pallets produced in the U.S., about 20 percent are treated for ISPM-15 compliance, indicating that they are suitable for international shipment. The remainder are used domestically or in trade with Canada, for which ISPM-15-compliant wood packaging is not required. APHIS works with private contractors to certify and inspect US wood packaging manufacturers in order to ensure compliance with ISPM-15.

## What are the Policy Challenges?

Invasive forest insects and diseases pose a number of challenges that cut across technical, institutional, economic, and political sectors.

- Species introductions are generally irreversible, and new ones are unpredictable.
- Chemical and biological controls often have limited efficacy and/or unintended adverse side effects.
- There are vast trade flows and multiple points of entry.

- Enforcement and inspection are difficult with such trade volume—only 1 to 2 percent of containers are inspected—and ability of pests to escape detection with inspections is relatively high (in their larval form, they are embedded within wood packaging and mostly concealed by the goods themselves).
- International standards are necessary but may not be sufficient. Despite best efforts, invasive pests including wood borers continue to enter the country. While risk reduction of up to 50 percent is very beneficial, under the current policies a significant number of pests could enter and gain a foothold in U.S. forests.
- There are limited and diverse “spans of control,” primarily at U.S. Customs points of entry, and despite international treaties, the U.S. cannot regulate other countries.
- Numerous sectors are economically dependent on the current system. For instance, wood pallet production accounts for 40 percent of U.S. hardwood production. The overall wood industry depends on wood packaging as a major component of the wood economy.
- The U.S. receives more invasive forest pests from Asia than the U.S. exports to Asia. Thus, there’s a mismatch in incentives for U.S. versus foreign export countries.
- Although pallets from other countries bring pests to the U.S., changes to the overall wood pallet market could affect domestic as well as foreign pallet manufacturers.

There are at least six areas where the current standards and their implementation may fall short.

- The treatment may not be effective at killing all pests.
- The treatment may not be performed adequately.
- The monitoring and oversight of manufacturing/treatment within a source country is incomplete or inadequate.
- The treatment may be adequate but the materials are subsequently re-infested.
- Materials that have not been treated may be fraudulently marked.
- The point or degree of inspection is incomplete (only a small proportion of imported pallets can be inspected because of limited budgets and high volumes of trade, and wood boring insects are hard to find by inspection).

## Options for Action

Given the problem, contexts, and challenges named above, roundtable participants engaged in discussions around three primary areas for potential action:

- (1) government action at various levels;
- (2) voluntary action by companies, trade associations, purchasers of products, and others;
- (3) education, outreach, and engagement. The following summarize the key ideas and points that arose out of the discussions on these three broad topics.

### ***Government action: ideas to consider***

- Increase penalties for shipments that do not comply with wood packaging standards. The penalties could be monetary fines, increased rejection at points of entry, or prohibiting the use of wood packaging material by a country or a shipper for a penalty period.
- Increase inspection and monitoring.
- Invest in and support capacity-building of the U.S. trading partners’ ISPM-15 implementation.
- Utilize various trade talks to incorporate more rigorous standards into international trade treaties.
- Place tariffs on the highest-risk trading partners.
- Require imports on U.S.-treated and inspected pallets only. This was discussed but was considered probably not feasible.
- Prohibit solid wood packaging in all international trade.
- Use investor-state dispute resolution processes to address this issue.
- Release detailed government statistics on imports and outbreaks of pests.
- Create regulations on disposal of pallets within the U.S.

### ***Voluntary actions and standards: ideas to consider***

- Consider voluntary or state standards at the private distribution level regarding the storage, disposal, and reuse of pallets. Standards might be tied to general sustainability plans and commitments from large wholesalers or retailers (Amazon, Walmart, Target, etc.) or to the ISO 9000 Series of Standards.
- Consider supply chain management for companies with sustainability plans or commitments to such standards as those maintained by the Forestry Stewardship Council. These might include a set of inspections, accountability and processes that supplement and even create redundancies with government roles in the production, treatment, inspection and shipping of pallets.

- Create a new third-party certification program to address “forest friendly shipping” that might cover supply chain management protections and actions from manufacturing overseas to distribution within the U.S.
- Through voluntary contributions, dues, taxes, fines, or tariffs, create a “mitigation loss” fund available to municipalities and others who bear the costs of the impacts of invasives (tree death followed by the need for removal, destruction, and prevention of spread).
- Engage with NGOs in a campaign to raise awareness of the issue and bring reputational risk to those companies not taking action to reduce the risk (say, you are not protecting the forests where your employees live, hunt, fish and otherwise recreate).
- Link the risk of invasive pest impacts to carbon sequestration emerging markets and mechanisms.
- While the group explored civil suits and litigation as a means to provide disincentives, demonstrating cause and effect between private actions and public losses due to invasives is difficult and may not rise to negligence let alone to criminal intent. Thus, the participants did not see civil suits as a likely useful mechanism.

### ***Education and outreach: ideas to consider***

- The challenge is identifying the most likely audiences who can in turn induce change. Should we focus on “retail,” that is, consumers, or “wholesale,” that is major buyers of foreign goods shipped to the U.S. like Walmart?
- Potential audiences include legislative staff at the national level, states, cities and mayors, consumers through such tools “Buy American” and why, importers, major purchasers of foreign products (Amazon, Walmart, etc.), forest land owners, forest-related industries like tourism, the Departments of Justice and State given their training and links to foreign governments.
- Key messages might include:
  - The importance of continued financial government support for monitoring, data collection, and research.
  - Origin stories of the sources of infestation without casting specific blame to make clear the simplicity, ease, and ordinariness of how infestation can begin but grow quickly to epidemic proportions.
  - Identifying foreign trade and overseas pallet manufacturing as major causes.
  - The importance of pest-free shipping.

- The costs of invasive pests to forest health, ecosystem services and carbon sequestration.
- The costs of invasive pests to municipalities and property owners.
- Key tools or methods might include:
  - Campaigns like the Amazon Rainforest campaign that created “smart trade” or “fair trade.”
  - Analyzing the effectiveness of some programs like the Don’t Move Firewood campaign.
  - “Bee friendly plants” and other examples of product labeling to drive both awareness and purchase of the “right” materials.
  - Third party certification programs that might be linked to current sustainable forestry efforts (FSC, etc.) or to specific manufacturing standards as part of sustainable supply chain management by companies or industries.
  - Linking this issue to public and private sustainability and climate change plans and goals.

## **Summary of Discussions**

In sharing the results of the break-out groups, the participants identified several potential next steps.

- Support and advance research
  - Encourage the collection of data necessary to repeat the Haack et al. study on the effectiveness of ISPM-15.
  - Support research to better understand the flow of pallets from their manufacturer in key foreign markets with high potential for invasive wood boring insects all the way to their distribution, storage, reuse or disposal in the United States.
  - Support research through USDA labs on both treatment and inspection techniques and new technologies.
- Develop and hone options for adding to an existing standard or certification program, or creating a new third-party certification program, regarding managing wood pallets for invasive wood boring insects.
- Develop a more compelling public message and story about why the public should care about forest invasives, trade, and wood packaging materials.
  - Consider an Op Ed in a major media outlet. See example of recent Op Ed in the *New York Times*: “The Beetle that Ate New York.”
- Implement meaningful penalties for shippers that do not comply with current wood packing regulations.
- Engage additional stakeholders and potential allies
  - Engage Customs and Border Protection agents to explore current monitoring and inspection practices and routines.

- Engage U.S. DOJ and U.S. State Department to identify levers and hooks for influencing exporting countries.
- Engage towns, cities, and counties and their associations as key allies and constituents.
- Engage journalists and the media based on the compelling messages and stories created.
- Engage coalitions of companies focused on sustainability (and their sustainability directors).

## Participants

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## Notes:

- <sup>1</sup> Lovett, G. M., M. Weiss, A. M. Liebhold, T. P. Holmes, B. Leung, K. F. Lambert, D. A. Orwig, F. T. Campbell, J. Rosenthal, D. G. McCullough, R. Wildova, M. P. Ayres, C. D. Canham, D. R. Foster, S. L. LaDeau, and T. Weldy. 2016. Nonnative forest insects and pathogens in the United States: Impacts and policy options. *Ecological Applications* 26: 1437-1455. [https://www.caryinstitute.org/sites/default/files/public/downloads/project/lovett\\_et\\_al\\_ecological\\_applications\\_2016.pdf](https://www.caryinstitute.org/sites/default/files/public/downloads/project/lovett_et_al_ecological_applications_2016.pdf)
- <sup>2</sup> Leung, et.al., June 2014. Pathway-level risk analysis: *The net present value of an invasive species policy in the US*. *Frontiers in Ecology and Environment*, 12(5):273.
- <sup>3</sup> Haack, R. A., K. O. Britton, E. G. Brockerhoff, J. F. Cavey, L. J. Garrett, M. Kimberley, F. Lowenstein, A. Nuding, L. J. Olson, J. Turner, and K. N. Vasilaky. 2014. *Effectiveness of the international phytosanitary standard ISPM no. 15 on reducing wood borer infestation rates in wood packaging material entering the United States*. *Plos One* 9:e96611.

## About Hubbard Brook Roundtables

The Hubbard Brook Research Foundation (HBRF) is an interface organization spanning the boundaries between science and society. HBRF periodically convenes Hubbard Brook Roundtables to facilitate mutual learning among scientists and stakeholders to improve environmental research, practice, and policy in the northeastern US. This program is partially supported by the National Science Foundation under grants: DRL-1713204 and DEB-1637685. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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