NISC / ISAC Meeting – May 2015, Silver Spring, MD

The Invasive Species Advisory Committee (ISAC) will hold a meeting to discuss a broad range of topics related to invasive species. These discussions will serve as a basis for making recommendations to the National Invasive Species Committee and to shape future work efforts of ISAC. While the meeting will focus on a broad range of invasive species topics, special emphasis will be placed on facilitating the productivity of ISAC subcommittees.

ACTION OR INFORMATION ITEM

SPONSORING NISC/ISAC MEMBER:	**Stas Burgiel, NISC**
COMMITTEE AFFILIATION:	**NISC support staff for Prevention sub-committee**
PRESENTER'S NAME/AFFILIATION:	**Gary Lovett, Cary Institute of Ecosystem Studies; Kathy Fallon Lambert, Harvard Forest / Science Policy Exchange; Marissa Weiss, Science Policy Exchange / Harvard Forest**
TOPIC:	**Integrating Science & Policy to Reduce the Arrival of Non-Native Forest Insects and Pathogens in the U.S.**

1. **DESCRIPTION OF AGENDA ITEM:**
   The most serious and urgent near-term ecological threat for many U.S. forests and urban and suburban trees is the repeated introduction of insects and pathogens from other continents. The risk of new invasions remains high, even though the ecological and economic consequences of invasions are well-documented. Recent analyses of efforts to prevent the arrival of new forest pests show that prevention can reduce the rate of invasion while also providing a significant economic benefit. Yet most public attention remains on slowing the spread of pests, instead of doing more to prevent new arrivals. The Cary Institute, Harvard Forest and the Science Policy Exchange convened a team of 18 ecologists, entomologists, economists, and policy experts to synthesize the science on the impacts of non-native forest pests and to review potential policy options for preventing arrival and establishment of new pests. The team includes two past ISAC representatives, Faith Campbell and Ann Gibbs. We are preparing a review paper for a scientific journal and developing a science outreach effort to inform the public, media, and government officials about the severity of the problem and potential solutions.

   Our goal is to connect the latest research on forest pests and pathogens to policymakers with the authority to implement measures that will protect U.S. forests and trees from additional invasions. In our presentation to ISAC we will highlight the key findings of the synthesis report and the range of options we have identified to mitigate the risks associated with introduction and spread of forest pests and pathogens.

2. **WHY IS THIS ITEM IMPORTANT TO NISC / ISAC? DOES IT RELATE TO CURRENT OR ANTICPATED SUBCOMMITTEE NEEDS, ACTIONS, OR DIRECTION?**
   A fundamental focus of our project is strategies to prevent the introduction of forest pests into the U.S. through major pathways such as plant imports and solid-wood packaging material. This includes consideration of agency roles in trade policy, customs and quarantine procedures, and associated efforts to protect plant and animal health. Such pathway and trade policy issues are relevant to discussions within the ISAC prevention sub-committee.

   Additionally, the project addresses the role of surveillance and early detection, which could contribute to discussions with in the EDRR subcommittee.

3. **HOW DOES THIS ITEM RELATE TO THE 2008 – 2012 OR FUTURE NATIONAL INVASIVE SPECIES MANAGEMENT PLAN?**
   The presentation specifically relates to Objectives 1 and 2 under the prevention section in the 2008-12 Management Plan, which focus on pathways for intentional and unintentional introductions.

4. **PREVIOUS ACTIONS TAKEN BY NISC / ISAC ON THIS ITEM:**
   In 2001, ISAC focused on identification and management of priority pathways (research indicates that plant imports and solid-wood packaging are high priority pathways for forest pests). Similarly in 2011, ISAC addressed the need for vector management by relevant agencies. Finally, recent ISAC recommendations from 2014 relate to APHIS EDRR work on Asian longhorned beetle as well as input into the US Forest Service invasive species handbook. The proposed presentation would complement those discussions on EDRR and control with a prevention focus.

5. **ACTION REQUESTED OF NISC / ISAC:**
   The authority to implement many of the policy options we are putting forth resides with USDA-APHIS and other government agencies. The presenters welcome the input of ISAC on these policy options and are interested in how to work collaboratively to engage federal agencies in a discussion on their implementation.

6. **ALTERNATIVES:**
   The issues could be discussed within the prevention subcommittee session.

7. **ATTACHMENTS:**
   Summary of the paper & policy options, file name: “Lovett et al. Project summary for ISAC March 18.docx”

DRAFT
March 18, 2015
Non-Native Forest Insects and Pathogens in the U.S.: Impacts and Policy Options

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The goal of this initiative is to synthesize existing information on the trends, ecological and economic impacts, and policy options for invasions of non-native forest pests and pathogens in the U.S. The analysis will be applied to inform decisions related to preventing the arrival and introduction of these forest pests. The initiative has two phases. In the first phase, we have assembled a team of 20 forest ecologists, entomologists, economists and policy experts and are producing a paper that summarizes the current status of this problem, the ecological and economic damage, and the policy options for addressing the issues. The paper will be submitted to a peer reviewed scientific journal for publication. The second phase, timed to coincide with the publication of the paper, will involve release of a summary document of the findings of the study, media outreach to raise the profile of the issue, and targeted briefings and meetings to inform government authorities of the nature of the problem and possible solutions.

The findings of our study thus far include:

- The invasion of non-native insects and diseases into US forests has continued at roughly the same rate throughout the 20th and into the 21st century. Approximately 2.5 new insect pests are established in US forests every year. Some of these are inconspicuous, but some are very damaging. At the current rate of introduction, there is a 32% chance that another major damaging wood-boring insect will invade U.S. forests in the next 10 years.
- Ecological damage from introduced pests has been widespread and severe in recent years. Non-native forest pests and pathogens are one of the only threats that effectively eliminates entire tree species or genera from our forests. The resultant shift in forest structure and species composition alters growth and functioning of forest ecosystems and may degrade wildlife habitat. In urban and suburban areas, loss of trees from streets, yards and parks affects aesthetics, property values, shading, stormwater runoff, and even human health.
- Introduced insects and diseases are found in forests and cities throughout the U.S. but the problem is particularly severe in the Northeast and Upper Midwest.
- The economic damage from non-native pests has yet to be fully reckoned, but is in the billions of dollars per year. A recent analysis indicates that the direct economic impact of non-native forest insects in the U.S. is estimated to be at least: $2 billion per year in local government expenditures, $1.5 billion per year in lost residential property values, $1 billion per year in homeowner expenditures (e.g., tree removal and replacement), $216 million per year in federal government expenditures, and $150 million

in losses to timber owners. Notably, *the majority of this economic burden is borne by municipalities and residential property owners.*

- Current economic estimates underestimate the current costs and losses from forests pests as they do not include introduced pathogens, do not include the costs of inspection, surveillance, and slow-the-spread efforts, and do not reflect additional millions spent in the last five years on tree removal and replanting for Asian Longhorned Beetle and Emerald Ash Borer outbreaks. These figures also do not include the lost value of non-market ecosystem services provided by trees such as filtering air and water, preventing erosion, and providing recreation. In addition, they do not account for the economic value of lost ecosystem services or risk to green infrastructure that cities are increasingly investing in to address storm water and other sustainability issues.
- There are many means of introduction of non-native pests, but currently the two major pathways are importation of live plants and wood products, particularly wood packing material (WPM) such as pallets, crates and dunnage.
- Current policies and protocols for preventing introductions are having some positive effect and produce economic benefits by reducing the influx of pests, but the current system is insufficient in the face of burgeoning global trade and the risk of a damaging invasion remains high. All of the lines of defense require improvement, including pre-introduction measures undertaken with trading partners, measures to ensure clean shipments of plants and wood products, inspections at ports of entry, post-entry measures such as quarantines, and surveillance and eradication programs.
- Inspections are a necessary but not sufficient protection against importation of forest pests because the volume of trade is such that only a very small fraction can be inspected. However, inspections are important as a deterrent and as a means for gathering data on the effectiveness of policies.
- Many options exist for improving the lines of defense against new introductions. The options range from changes that would be highly effective but difficult to implement, to those that are simpler but probably less effective. The list of options presented in this report is not intended to be comprehensive, but represents an assessment by our team of measures most likely to be effective or new ideas that are most promising. They are based on our experience, interviews with other experts, and review of the relevant science and policy literature.
- Policy options
    - Enhancing protections at the point of origin
        - Expand trade programs that provide pre-clearance for shipments for those trading partners meeting phytosanitary standards
        - Expand sentinel tree programs in which North American tree species are planted in other countries and monitored for susceptibility to pests
    - Wood packaging material (WPM) pathway
        - Require packaging materials not made from solid wood for international shipping
        - Encourage large retailers to voluntarily remove WPM from their supply chains and substitute less risky materials such as composites and paper-based materials
        - Strengthen ISPM-15 requirements for treating WPM to ensure effectiveness against a broader range of pests
        - Tighten enforcement of ISPM-15 regulations and increase penalties for non-compliance
    - Live plant pathway
        - Severely restrict or eliminate imports of live woody plants for planting
        - Work with large retailers to establish voluntary supply chain standards for importing “forest-friendly” or “pest-free” woody plants
        - Change the current “black-list” and “grey-list” (NAPPRA) protocol for assessing plant safety to a white list of safe plants, with all others banned until proven safe
        - Increase enforcement of existing regulations and increase penalties for non-compliance
    - Inspections
        - Ensure that inspections are adequately funded

        - Enhance the current evidence-based approach by identifying high-risk pests and pathways, using prior inspection data as a guide
- Early detection and rapid response
    - Require post-entry quarantine of all imported trees and shrubs
    - Develop a coordinated national surveillance system with three tiers:
        - Visual and trapping surveys carried out by federal agencies and designed to target high-risk sites such as cities
        - Improved training of state and local personnel (e.g., extension agents, park workers, tree crews) to notice and report unusual infestations and tree declines
        - Enhanced public education, hotlines, and smartphone applications to encourage citizens to report unusual tree pest activity
    - Establish a pilot program of this 3-tiered system in one or more localities to gain insights that could inform its expansion to a national scale
    - Provide adequate emergency funding for APHIS to allow rapid and thorough eradication of new pest establishments; this funding model could follow the Credit Commodity Corporation (CCC) funding used for agricultural pest response
- Closing the decision-science gap
    - Improve inspection data quality and data management within APHIS and CBP
    - Revise data collection models to incorporate robust random sampling and targeted inspection for high-risk shipments, and ensure that data collection is adequate to evaluate new policies and protocols
    - Ensure access to APHIS and CBP inspection data by scientists from other agencies and academic researchers
    - Require regular data analysis and reporting by APHIS and CBP on the effectiveness of pest and pathogen prevention policies, including a biennial report to Congress
    - Continue to develop global information systems to effectively share information on known pests around the world
    - Increase collaboration across agencies and with academia to improve analysis of data and provide expertise to identify new pests
    - Establish a Scientific Advisory Committee under the Federal Advisory Committee Act to annually review the integrity of pest prevention, clean pathway, and surveillance programs and resultant data