

PREPSYS

Preparing Europe for emerald ash borer and bronze birch borer: filling the knowledge gaps to prepare for the worst

Hugh Evans, David Williams and
Antoon Loomans

Representing partners in Austria,
Ireland, The Netherlands, UK and
USA

- PREPSYS project A-167 approved by Euphresco in July 2016 and had an official start date of 1 October 2016
- Partnership:
 - Forest Research - FR (UK): project coordinator Prof Chris Quine, science coordinator Prof Hugh Evans with Dr Mariella Marzano & Dr David Williams.
 - Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft - BFW (Austria): Dr Gernot Hoch and Dr Ute Hoyer-Tomiczek
 - Department of Agriculture Food and the Marine - TEAGASC (Ireland): Dr Gerry Douglas and Dr Rachel Wisdom
 - Nederlandse Voedsel-en Warenautoriteit - NVWA (The Netherlands): Dr Antoon Loomans and Dr Martijn Schenk
 - United States Department of Agriculture, Animal and Plant Health Inspection Service – USDA APHIS: Dr Leslie Newton, Dr Laurene Levy and Dr Wendy Jin

- Formal title: *Risk-based strategies to prepare for and manage invasive tree borers*
- A UK Risk Register has been established for a very wide range of pests and pathogens (<https://secure.fera.defra.gov.uk/phiw/riskRegister/>)
- Among the 930 organisms in the register, both emerald ash borer (*Agrilus planipennis*) and bronze birch borer (*Agrilus anxius*) are regarded as posing high risk to Europe



David Cappaert, Bugwood.org

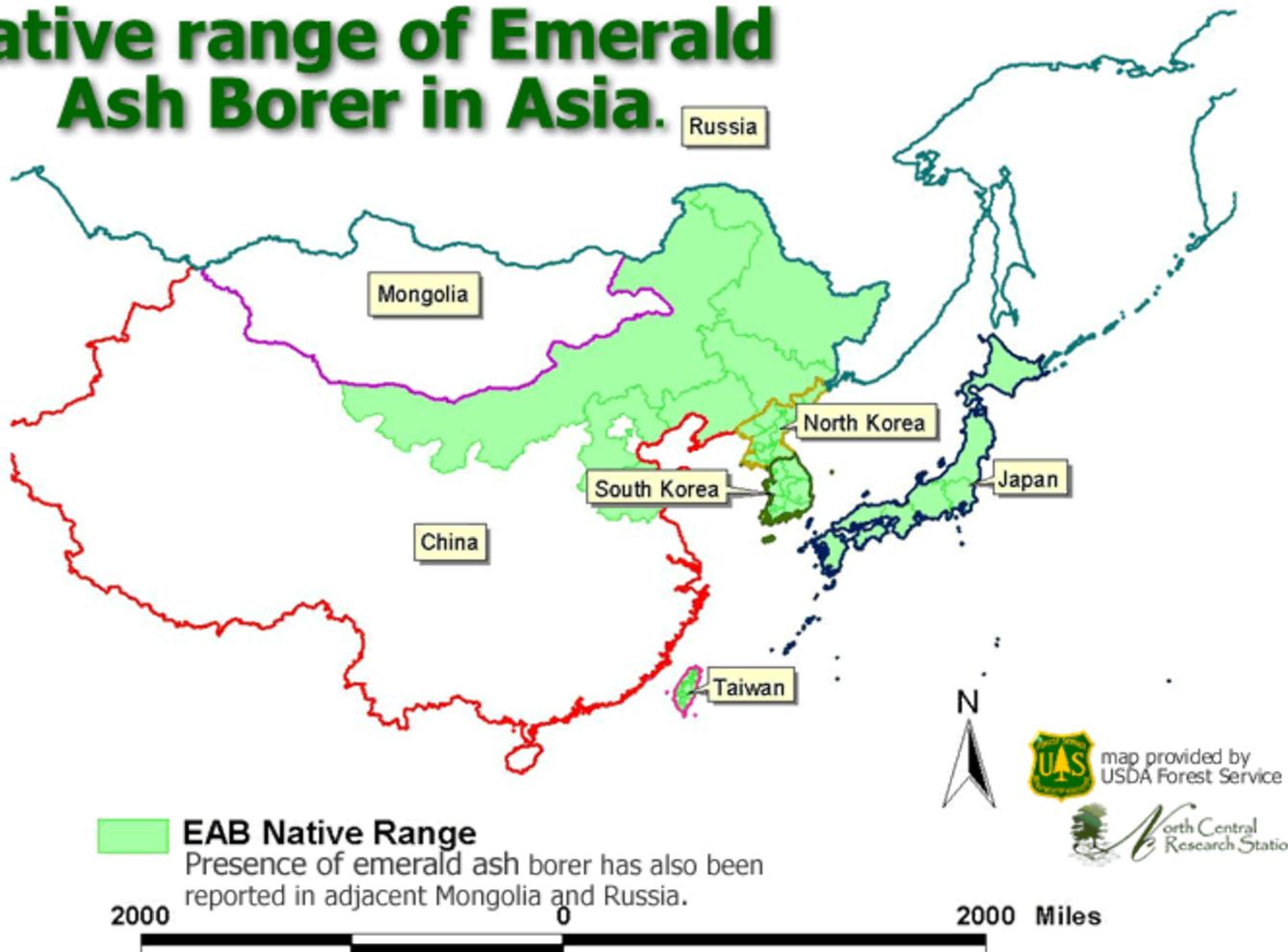


Steven Katovich, USDA Forest Service, Bugwood.org

Unmitigated Risk		Unmitigated Risk										
Entry	Establishment	Likelihood	Spread	Impact - economic	Impact - environmental	Impact - social	Impact	Likelihood x Impact	Value at Risk	Value at risk	Impact x Value at Risk	UK Relative Risk Rating (unmitigated)
EAB	5	5	4	5	5	4	5	25	A	5	25	125
BBB	4	5	4	5	4	4	5	20	A	5	25	100

Arising from this assessment, the PREPSYS project has been developed under the EU Euphresco initiative

Native range of Emerald Ash Borer in Asia.



Quotes from press release:

“New research at Michigan State University shows that the uber-destructive emerald ash borer arrived at least 10 years before it was first identified in North America”

“EABs were feasting on ash trees in southeast Michigan by the early 1990s, well before this pest was discovered in 2002”, said Deb McCullough, MSU professor of forest entomology.

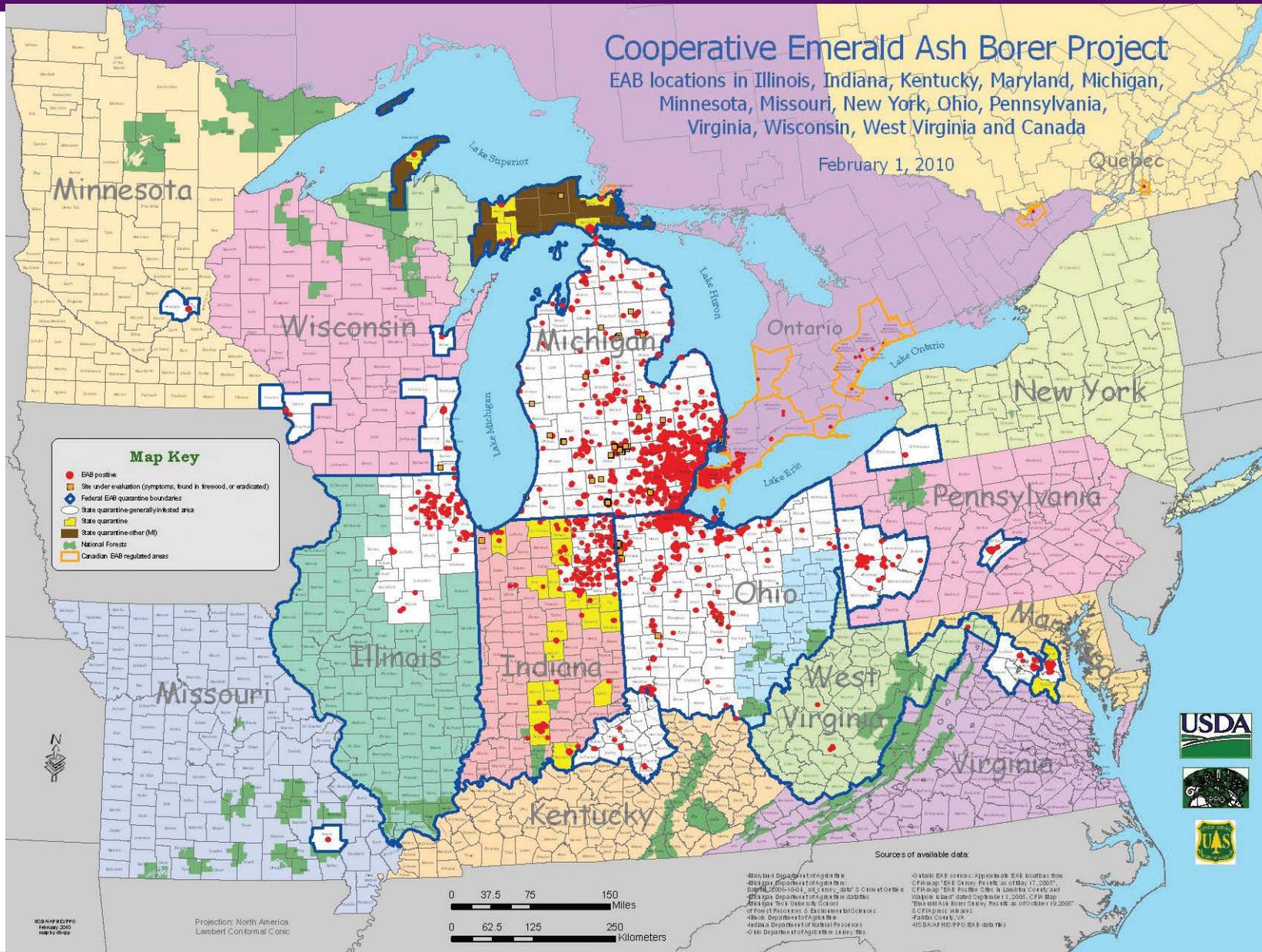
Why are we not surprised!!

Cooperative Emerald Ash Borer Project

EAB locations in Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Virginia, Wisconsin, West Virginia and Canada

February 1, 2010

Quebec



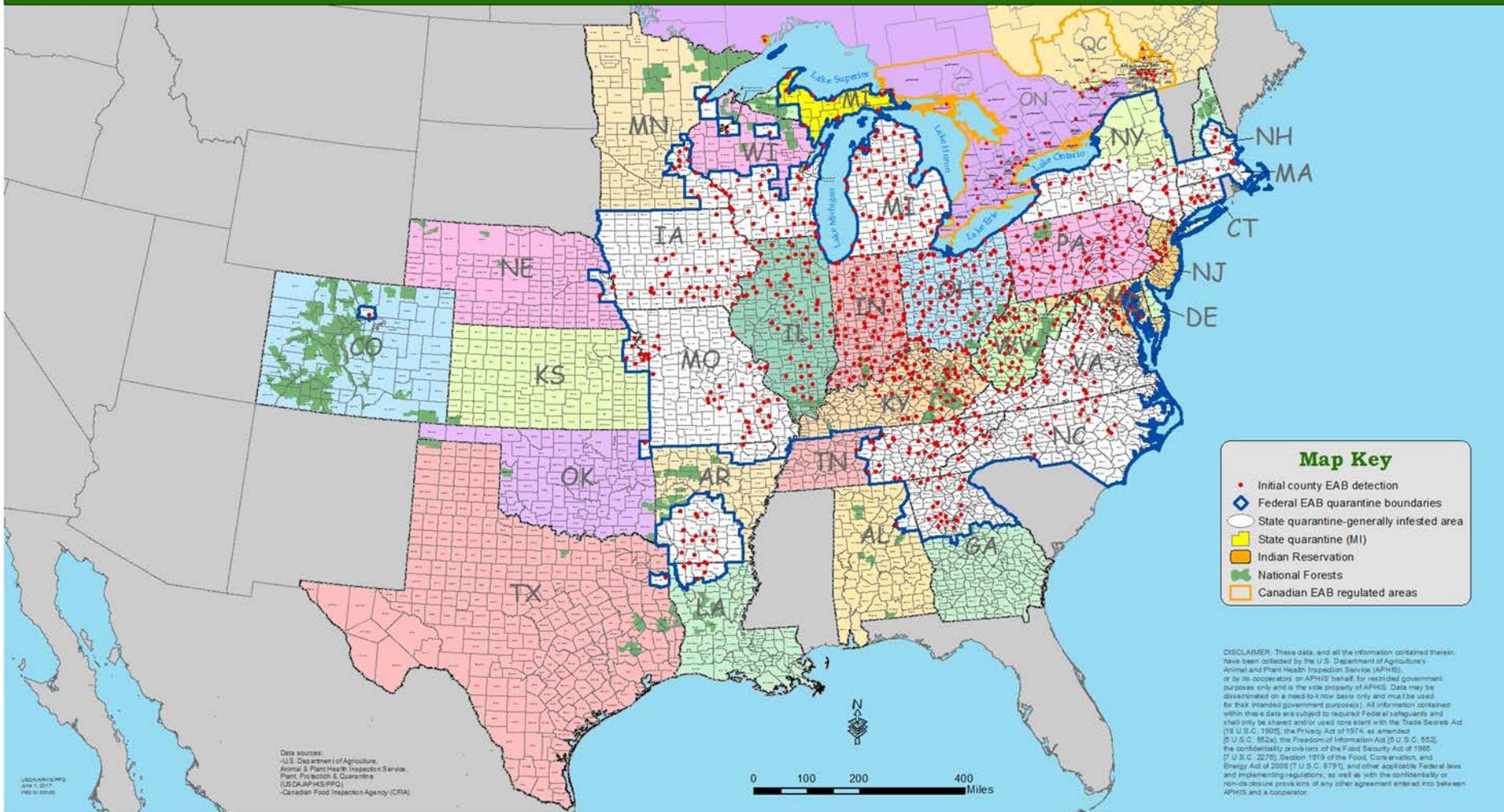


United States
Department of
Agriculture

Cooperative Emerald Ash Borer Project

Initial county EAB detections in North America

June 1, 2017



- What are the potential risks, impacts and main pathways for movement of the pests and how can Europe better protect against the risk of introduction?
- What are the rates of natural spread and can we improve prediction of spread?
- How can we improve early detection?
- How can we develop or improve cost-effective management and control approaches and tools (including biological control)?
- How can we best communicate and implement policy and engage with stakeholders?

For each question, the starting point is to identify the **state of knowledge internationally** and with **specific reference to European conditions** and **identify and prioritise knowledge gaps**.

- The project was presented to the USDA Interagency Research Forum on Invasive Species held in Annapolis, Maryland in January 2017
- The potential importance of invasive buprestid beetles was emphasised and key questions for PREPSYS were posed.
- North America is a key region for both EAB and BBB.
 - EAB – invasive to Canada and USA, origin Asia. Much published on EAB, but still a need to interpret information and extract key knowledge to help prevent its arrival and be prepared to deal with it if (when) it establishes in Europe.
 - BBB – native to North America and relatively low profile there. Risk assessment has been carried out for BBB, but there is still uncertainty on pathways for invasion and on potential impact should it get to Europe.

From Annapolis meeting feedback, this fact-finding visit to Canada and USA has been arranged.

Hugh Evans and David Williams FR, Antoon Loomans WVL (Canada only) and Gernot Hoch and Ute Hoyer-Tomiczek BFW (USA only) are contributing. Scientists who joined the PREPSYS Expert Forum (email list for exchange of ideas) are hosting parts of the itinerary in both Canada and USA

These are some of the questions that we are particularly keen to explore. Particularly to know what has worked well and what we should avoid, based on North American experiences.

Pathways for international and local movement (Antoon will expand on this)

1. From your experience, what are the main natural and, especially, human-assisted pathways?
2. What are the best strategies for reducing or eliminating movement of the pests along pathways?

Strategies to deal with potential new establishment of EAB or BBB

1. What are the best traps and lures for EAB and BBB, especially for early detection?
2. This component of our work is closely aligned with the Euphresco Multilure project that is coordinated by Neil Audsley in the UK. Is there scope for collaboration on this approach?
3. Can trapping be relied upon to provide an indicator of a local breeding population of EAB and what is its relative value compared with (or in addition to) branch sampling?

Strategies to deal with potential new establishment of EAB or BBB

1. Best processes for rapid determination of the scale and age of an infestation and criteria for whether eradication is feasible?
2. Criteria for the scale and value of a clear-cut zone in attempting eradication. Is eradication feasible in any event?
3. If clear-cutting is being carried out, what is the influence of tree cover in a heterogeneous landscape, i.e. when trees are either clustered or widely spread with large gaps between?
4. From what we have learned so far on this visit, is managing the insect towards low population density feasible or should management concentrate on the fate of trees, including slowing the rate of tree mortality?

Sharing of experiences arising from dealing with EAB or BBB outbreaks

1. What experiences of stakeholder and public engagement should we take account of in preparing for potential invasion?
2. In retrospect, what would you regard as the most effective and, conversely, least effective components of an eradication/ long-term containment strategy?
3. What are the key knowledge gaps and are any specific to Canada, China, Russia or USA for EAB and North America for BBB?
4. To aid collaboration we have set up a PREPSYS project Expert Network; currently 20 members in Canada, France, Germany, Italy, Russia and USA. We welcome more members.
5. We will also be setting up a Stakeholder Group to explore policy communication and implementation methods. This will be run by Dr Mariella Marzano (mariella.marzano@forestry.gsi.gov.uk). Again, we welcome anyone who is interesting in joining.

- Within the project, Dr Ute Hoyer-Tomiczek (BFW) is training dogs to detect EAB in infested material.



- Ute is collecting infested material to help train the dogs and has a specific request for help in this and will collect whilst on the USA visit:
 - dead larvae, pupae, adult beetles – died naturally or killed by freezing, **not** with chemicals
 - stored dry, **not** in alcohol, may be frozen (but then shipping will be problematic)
 - stored in pure clean unused glasses (or, less suitable, in plastic tubes)
 - wood pieces with empty larval galleries, pupal chambers and exit holes – dried at room temperature
 - **not** fumigated because the fumigants change the original scent
 - **not** heat-treated because high temperatures change original scent
 - **not** autoclaved because high temperatures and high pressure change original scent
 - **free of other insects and fungi**

- Wood pieces with living larvae can be shipped or transported using a Letter of Authority for the introduction and/or movement of harmful organisms, plants, plant products and other objects for trial or scientific purposes and for work on varietal selections (issued under Directive 2008/61/EC)
- sawdust/frass of the larvae – collected in pure clean unused glasses

Thank you for your attention.

Thanks to Defra for UK funding

See our website for further information:
www.forestry.gov.uk/fr/prepsys