The Invasive Species Information Program (ISIP)

ISI Program Purpose:

To support the detection, prevention, and suppression of invasive forest insects and diseases.

The Invasive Species Information (ISI) Program

ISI Products:

- **The Exotic Forest Pest Website (ExFor)**
  - http://dev.dtsagile.com/ExFor/
- Risk Maps
  - Introduction
  - Establishment
  - Susceptibility
  - Uncertainty
  - Sample Designs
  - Additional Species
  - Other Miscellaneous Input Variables

The Exotic Forest Pest Website

A searchable database that provides information and mapping capabilities for insects and diseases that are a threat to North American forests.

http://dev.dtsagile.com/ExFor/

The Exotic Forest Pest Website

Sponsored by:

The North American Forest Commission

Partners:

- United States Forest Service Forest Health Protection
- Food and Agriculture Organization of the United Nations
- Canadian Food Inspection Agency (CFIA)
- Canadian Forest Service
- Colegio de Postgraduados - Campus Tabasco (ColPos)
- Comisión Nacional Forestal, CONAFOR,

http://dev.dtsagile.com/ExFor/

The Exotic Forest Pest Website

Contains:

- Pest Risk information for North America
- Contains 170 Invasive Insect and Disease Forest Pest Records
- Jointly sponsored with the North American Forest Commission (NAFC)

http://dev.dtsagile.com/ExFor/

Pest Record Content

Documentation

- pest identification
- biology
- distributions: current and potential
- detection and control methods

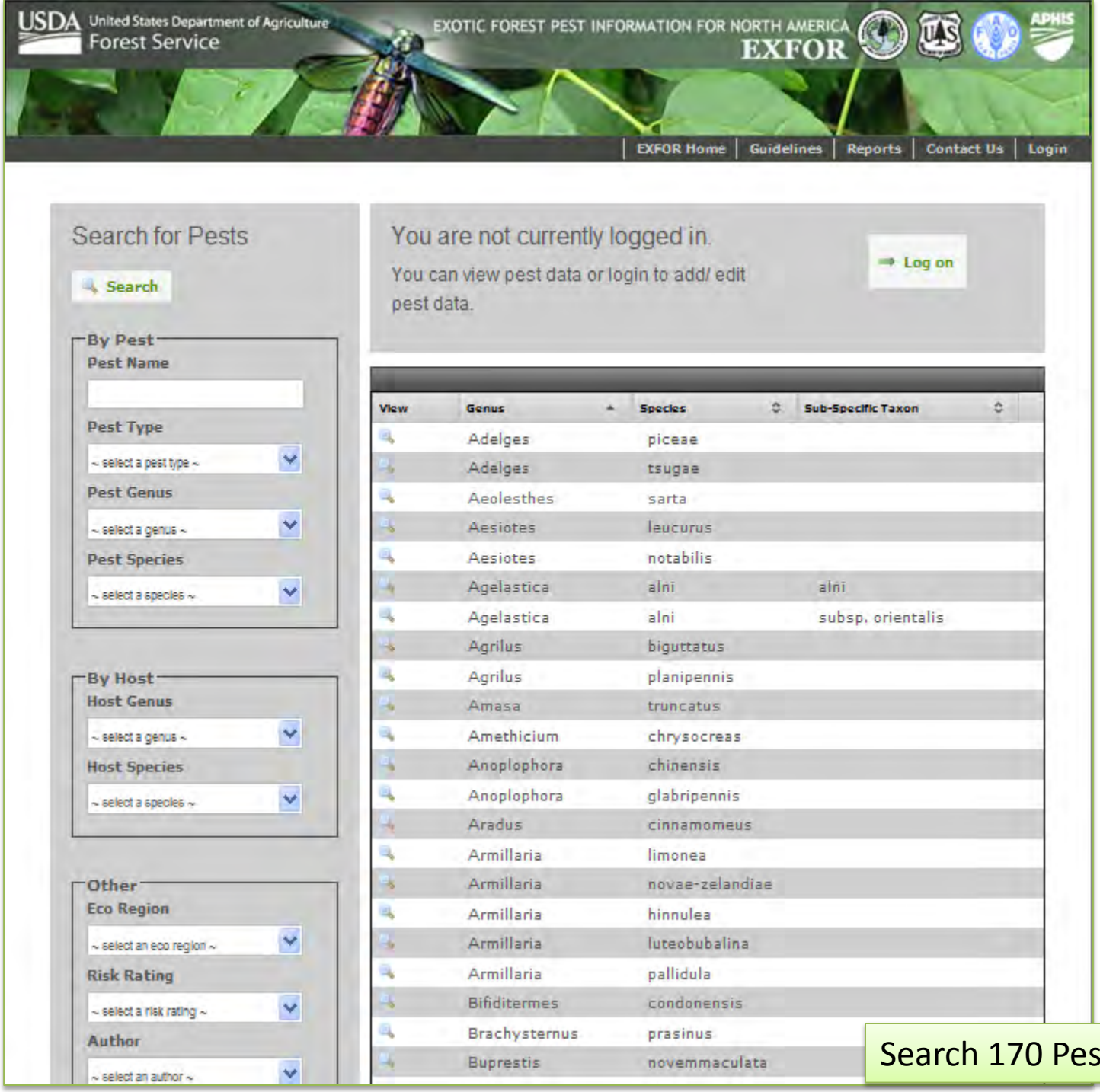
Risk Assessment

- potential to establish and spread
- propensity to cause economic and environmental harm

Risk Rating

- 1 - Very Low to 9 - Very High

http://dev.dtsagile.com/ExFor/


USDA United States Department of Agriculture
Forest Service
EXOTIC FOREST PEST INFORMATION FOR NORTH AMERICA
EXFOR
APHIS
EXFOR Home | Guidelines | Reports | Contact Us | Login
Search for Pests
Search
By Pest
Pest Name
Pest Type
~ select a pest type ~
Pest Genus
~ select a genus ~
Pest Species
~ select a species ~
By Host
Host Genus
~ select a genus ~
Host Species
~ select a species ~
Other
Eco Region
~ select an eco region ~
Risk Rating
~ select a risk rating ~
Author
~ select an author ~
You are not currently logged in.
You can view pest data or login to add/ edit pest data.
Log on
View | Genus | Species | Sub-Specific Taxon
Adelges | piceae
Adelges | tsugae
Aeolesthes | sarta
Aesiotes | laucurus
Aesiotes | notabilis
Agelastica | alni | alni
Agelastica | alni | subsp. orientalis
Agrilus | biguttatus
Agrilus | planipennis
Amasa | truncatus
Amethicium | chrysocreas
Anoplophora | chinensis
Anoplophora | glabripennis
Aradus | cinnamomeus
Armillaria | limonea
Armillaria | novae-zelandiae
Armillaria | hinnulea
Armillaria | luteobubalina
Armillaria | pallidula
Bifiditermes | condonensis
Brachysternus | prasinus
Buprestis | novemmaculata
Search 170 Pest Records

Agrilus planipennis

Example of the *Agrilus planipennis* Pest Record

Identity

Pest Type:	Insect
Authorities:	Fairmaire
Taxonomic Position:	Insecta : Coleoptera : Buprestidae
Synonyms:	Agrilus feretrius Obenberger Agrilus marcopili Obenberger Agrilus marcopoli ulmi Kurowasa
Common Names:	Emerald ash borer, EAB (English)

Risk Rating Summary

Risk Rating:	Very High (9)
Uncertainty:	Very uncertain
Comments:	

Risk Rating Details

Establishment Potential:	3
Criteria:	Organism has successfully established in location(s) outside its native distribution. Suitable climatic conditions and suitable host material coincide with ports of entry or major destinations. Organism has demonstrated ability to utilize new hosts. Organism has active, directed host searching capability or is vectored by an organism with directed, host searching capability. Organism has high inoculum potential or high likelihood of reproducing after entry.

Population

Male/ female ratio	
Fecundity	avg is 30-60 eggs; max is 2
Voluntism (generations/ year)	Normally one, but the numb

Dispersal

Period	May or Eary June
Ave distance (km) 90% of pop	1.30
Ave distance (km) 50% of pop	3.00
Minimum distance (km)	
Maximum distance (km)	20.00

Optimum Host Conditions

DBH (cm) (1.4m above ground on uphill side)	2.50
Stand density (# trees/ hectare)	1
Development stage (seedling, sapling, mature tree, etc)	A. planipennis larvae have c

Habitat

- [ ] Evergreen needleleaf forest
- [ ] Evergreen broadleaf forest
- [ ] Deciduous needleleaf forest
- [x] Deciduous broadleaf forest
- [ ] Evergreen needleleaf forest
- [x] Mixed forest
- [ ] Woodland
- [ ] Woodland grassland
- [ ] Closed shrubland
- [ ] Open shrubland
- [x] Urban

Role in Habitat

- [ ] Understory
- [ ] Overstory
- [ ] Stream cover
- [ ] Other

Stress Related

- [x] Drought/ flood
- [ ] Lightning strike
- [x] Broken limbs
- [ ] Already diseased
- [ ] Air pollution impacts

Agrilus planipennis Biology

Bauer, L.S.; Liu, H.P.; Gould, J.; Reardon, R. 2007. Progress on Biological Control of the Emerald Ash Borer in North America. Biocontrol News and Information. 28: 51N-54N.

Bauer, Leah S.; Dean, Donald; Handelsman, Jo. 2006. Bacillus thuringeniensis: potential for management of emerald ash borer. In: Mastro, Victor; Reardon, Richard; Parra, Gregory, comps. Emerald ash borer research and technology development meeting; 2005 September 26-27; Pittsburg, PA. FHTET 2005-16. Morgantown, WV: U.S. Forest Service, Forest Health Technology Enterprise Team: 38-39.

Bauer, Leah S.; Haack, Robert A.; Miller, Deborah L.; Liu, Houping; Petrice, Toby. 2004. Laboratory rearing of emerald ash borer. In: Mastro, Victor; Reardon, Richard, comps. Proceedings of the emerald ash borer research and technology development meeting; 2003 September 30 - October 1; Port Huron, MI. FHTET 2004-02. Morgantown, WV: U.S. Forest Service, Forest Health Technology Enterprise Team: 36-37.

Bauer, Leah S.; Haack, Robert A.; Miller, Deborah L.; Petrice, Toby R.; Liu, Houping. 2004. Emerald ash borer life cycle. In: Mastro, Victor; Reardon, Richard, comps. Proceedings of the emerald ash borer research and technology development meeting; 2003 September 30 - October 1; Port Huron, MI. FHTET 2004-02. Morgantown, WV: U.S. Forest Service, Forest Health Technology Enterprise Team: 8.

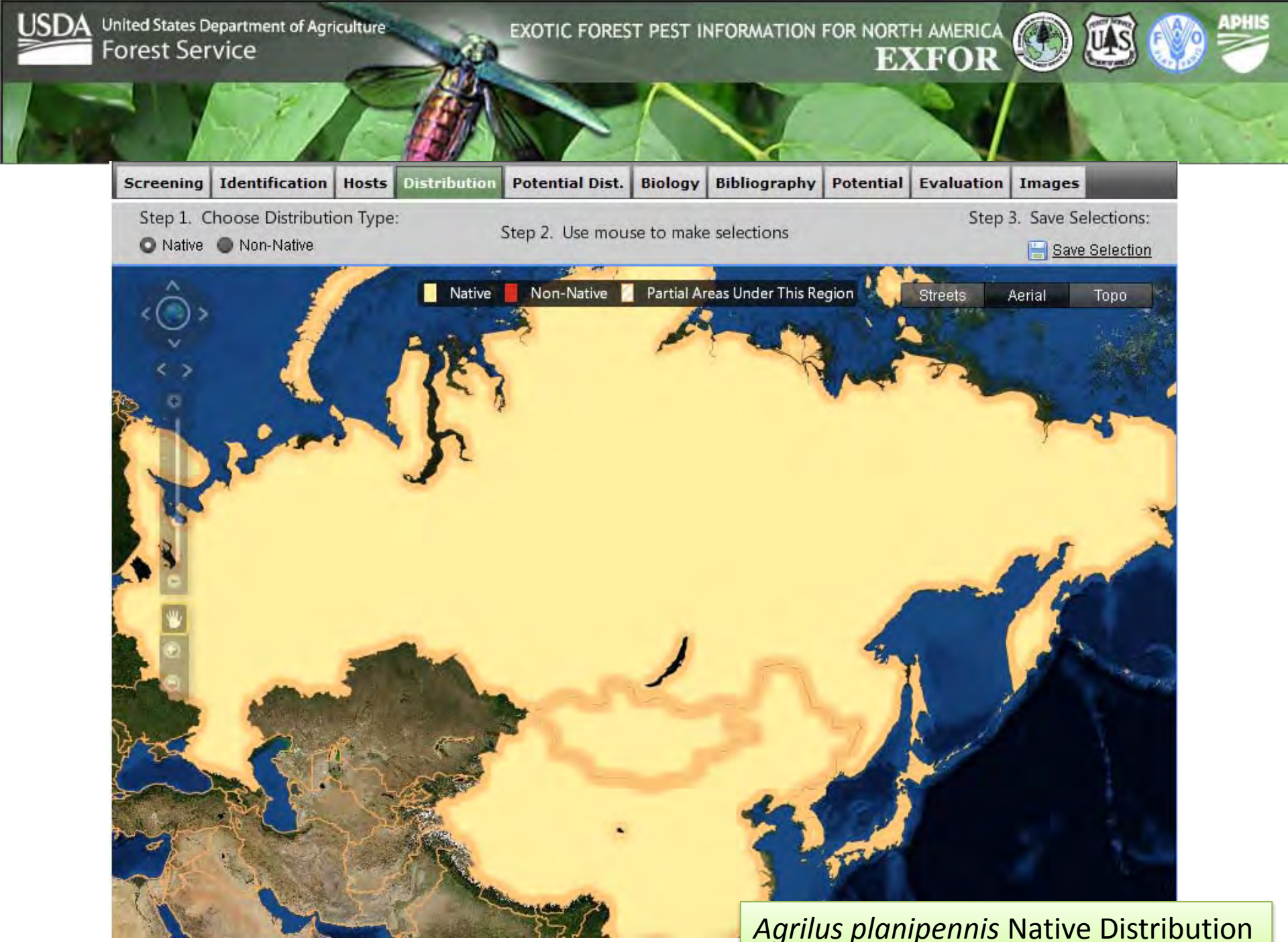
Bauer, Leah S.; Liu, Houping; Gao, Ruitong; Zhao, Tonghai. 2006. Egg and larval parasitoids of emerald ash borer from China: potential for biocontrol in North America. In: Mastro, Victor; Reardon, Richard; Parra, Gregory, comps. Proceedings of the 2005 emerald ash borer research and technology development meeting; 2005 September 26-27; Pittsburgh, PA. FHTET-2005-16. Morgantown, WV: U.S. Department of Agriculture, Forest Service, Forest Health Technology Enterprise Team: 48-49.

Bauer, Leah S.; Liu, Houping; Gould, Juli. 2008. Progress on biological control of emerald ash borer. In: Mastro, Victor; Lance, David; Reardon, Richard; Parra, Gregory, comps. Emerald ash borer research and development meeting; 2007 October 23-24; Pittsburgh, PA. FHTET 2008-07. Morgantown, WV: U.S. Department of Agriculture, Forest Service, Forest Health Technology Enterprise Team: 56-58.

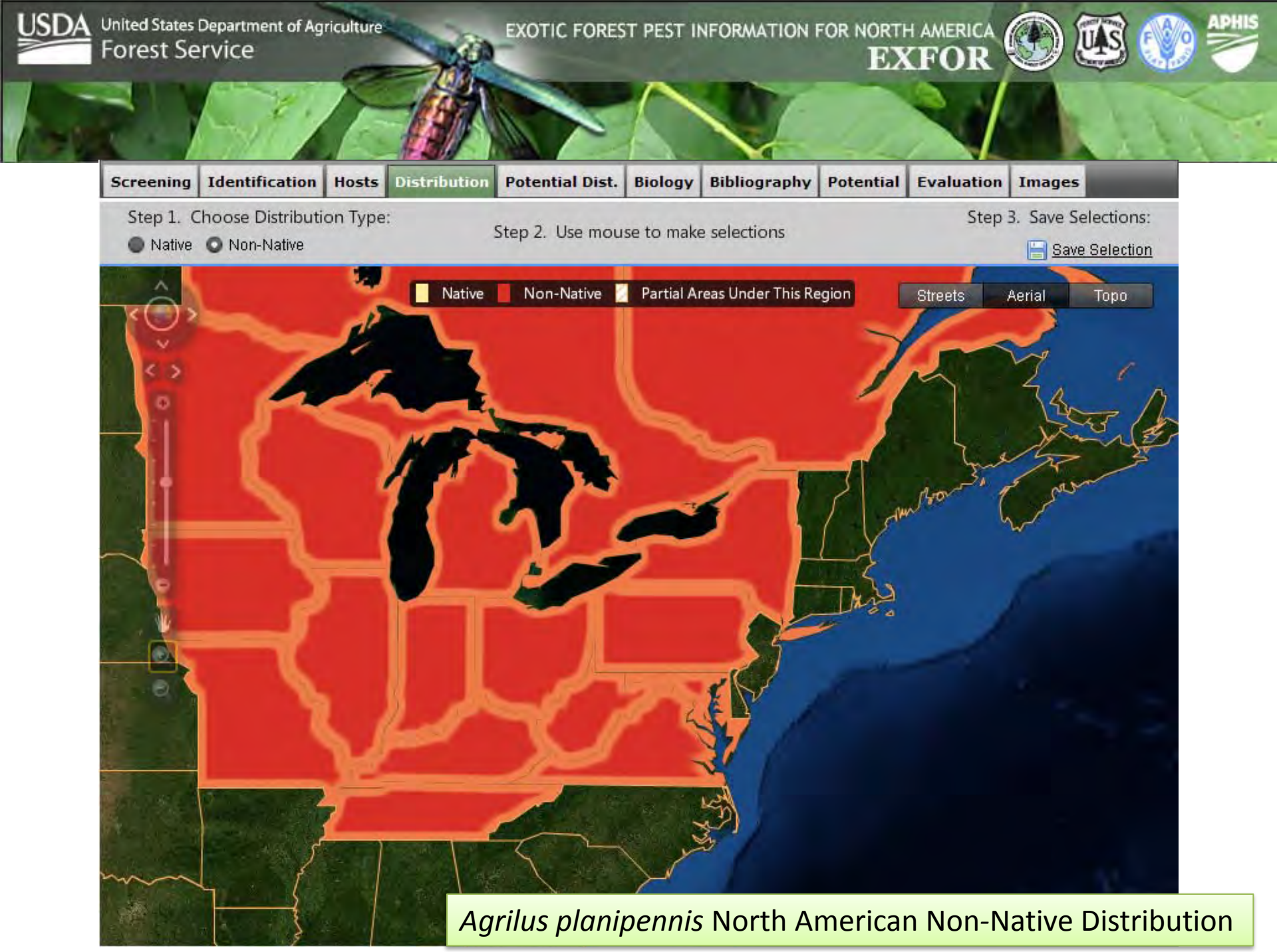
Bauer, Leah S.; Liu, Houping; Haack, Robert A.; Gao, Ruitong; Zhao, Tonghai; Miller, Deborah L.; Petrice, Toby R. 2005. Update on emerald ash borer natural enemy surveys in Michigan and China. In: Mastro, Victor; Reardon, Richard, comps. Proceedings of the emerals ash borer research and development meeting; 2004 October 5-6; Romulus, MI. FHTET 2004-15. Morgantown, WV: U.S. Forest Service, Forest Health Technology Enterprise Team: 71-72.

Bauer, Leah S.; Liu, Houping; Haack, Robert A.; Petrice, Toby R.; Miller, Deborah L. 2004. Natural enemies of emerald ash borer in southeastern Michigan. In: Mastro, Victor; Reardon, Richard, comps. Proceedings of the emerald ash borer research and technology development meeting; 200
Port Huron, MI. FHTET 2004-02. Morgantown, WV: U.S. Forest Service, Fores

Agrilus planipennis Bibliography



Agrilus planipennis Native Distribution



Agrilus planipennis North American Non-Native Distribution


USDA United States Department of Agriculture
Forest Service
EXOTIC FOREST PEST INFORMATION FOR NORTH AMERICA
EXFOR
APHIS
Screening
Identification
Hosts
Distribution
Potential Dist.
Biology
Bibliography
Potential
Evaluation
Images
Updates
Reset to defaults
Min: -47
Max: 28
-53
28
Host Temperature Range (°C)
Min: -53
Max: 28
-53
28
Pest Temperature Range (°C)
Select Soil Moisture
Low
Medium
High
Select Soil Texture
Fine
Medium
Coarse
Select Forest Types
Evergreen Needleleaf Forest
Evergreen Broadleaf Forest
Deciduous Needleleaf Forest
Deciduous Broadleaf Forest
Mixed Forest
Woodland
Wooded Grassland
Closed Shrubland
Open Shrubland
Urban and Built-up
Streets
Aerial
Topo
Agrilus planipennis Potential Distribution

Create Pest

NOTE TO AUTHORS:
The function of the pest record template is to prompt the author, through a series of questions and text fields, to supply Pest Risk Assessment (PRA) information as is currently accepted. The author is asked to answer only those questions that the author feels the research provides sufficient guidance. Credit for each record is attributed to the author, with additional credit given to individuals who provide specific information updates. When sufficient updates have been contributed to a pest record, meriting an overall review, the original author will be requested to create a new record. Should the original author decline, another author will be sought.

The last section in the template allows the author to provide an overall ranking of confidence in the PRA, which is also useful for pest risk analyses and mapping outputs. Thank you for your contributions. Marla Downing, ExFor Administrator

Pest Type: ~ select a pest type ~

Pest Genus:

Pest Species:

Create Pest

The Invasive Species Information (ISI) Program

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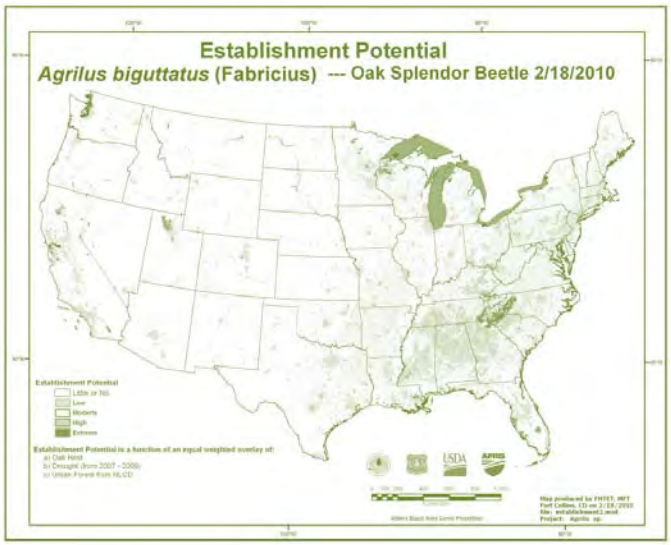
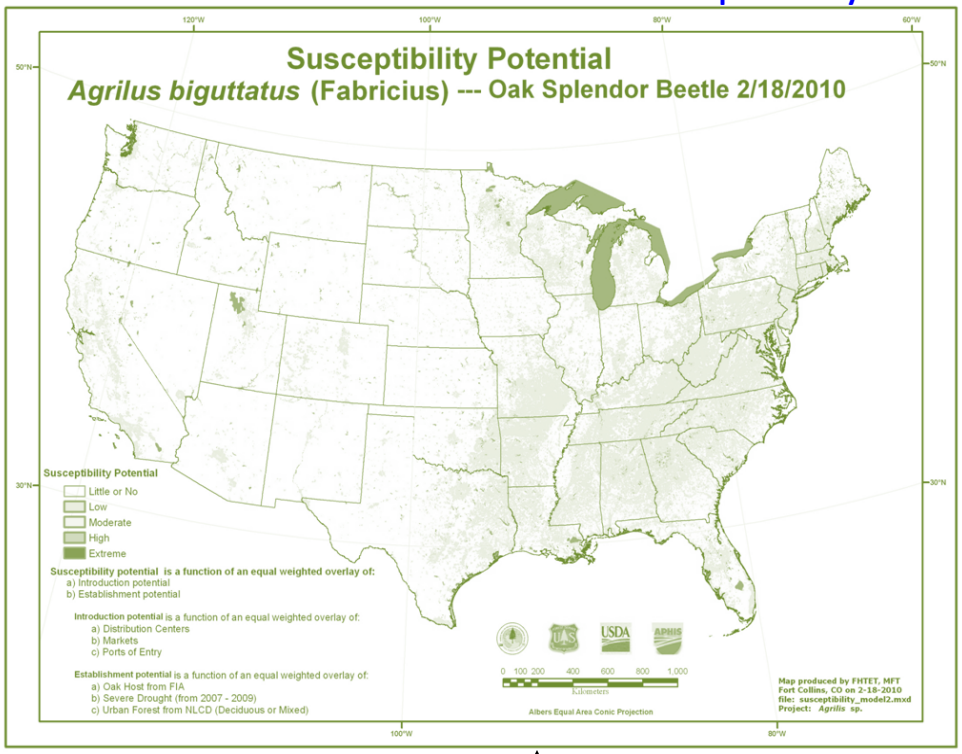
  - **Introduction**
  - **Establishment**
  - **Susceptibility**
  - **Uncertainty**
  - **Sample Designs**
  - Additional Species
  - Other Miscellaneous Input Variables

Agrilus biguttatus



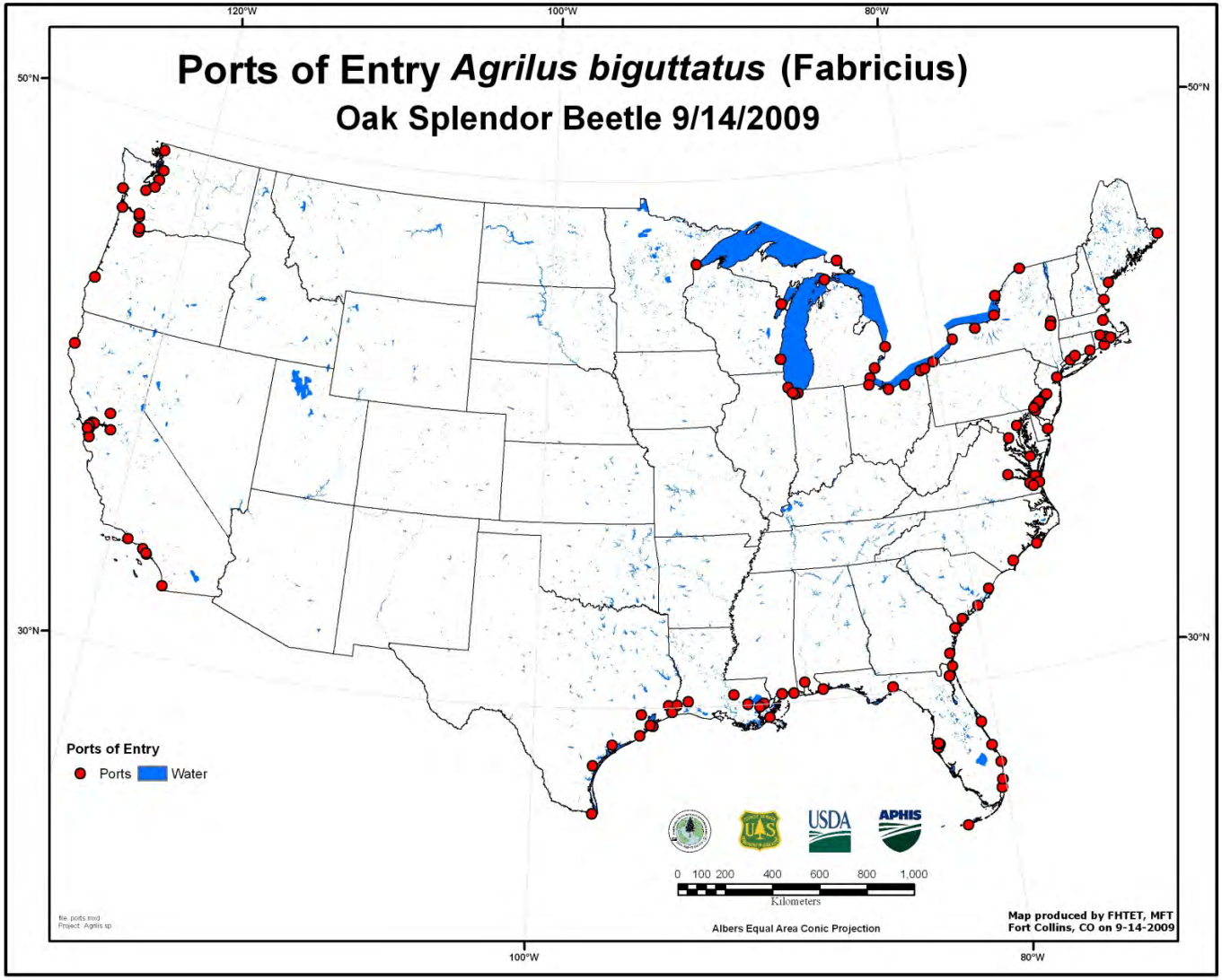
Introduction

= Susceptibility



Establishment

Agrilus biguttatus Introduction Potential



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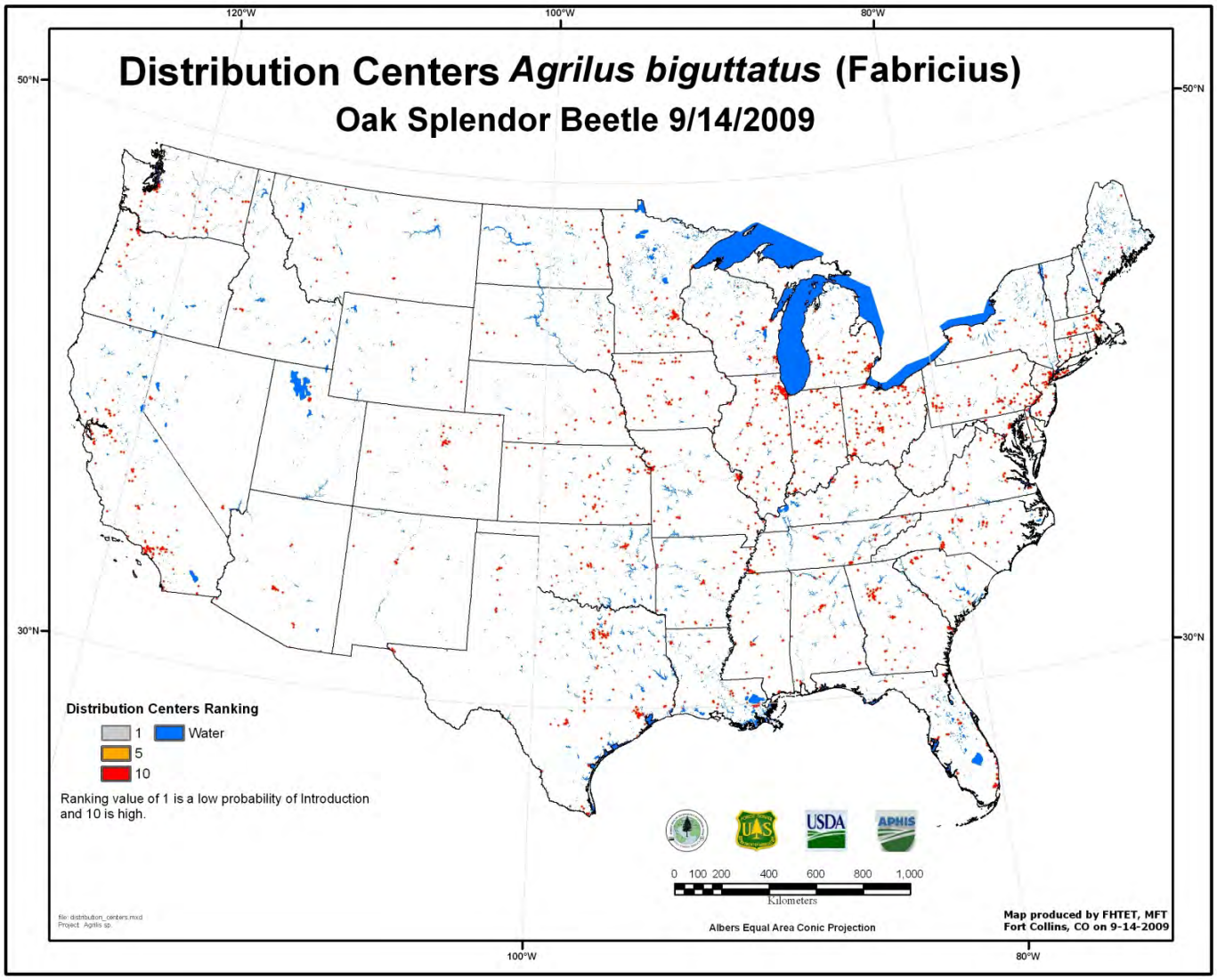

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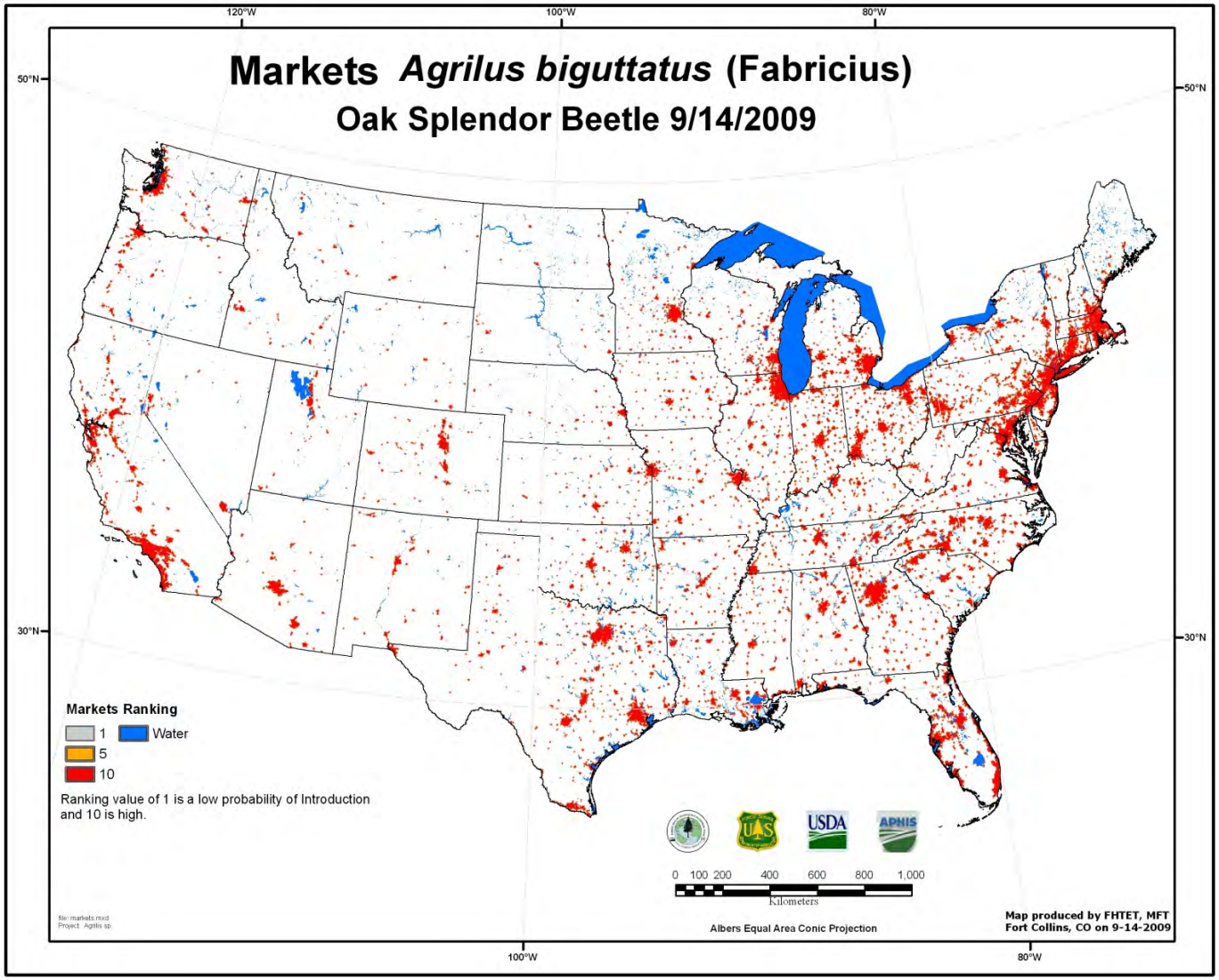
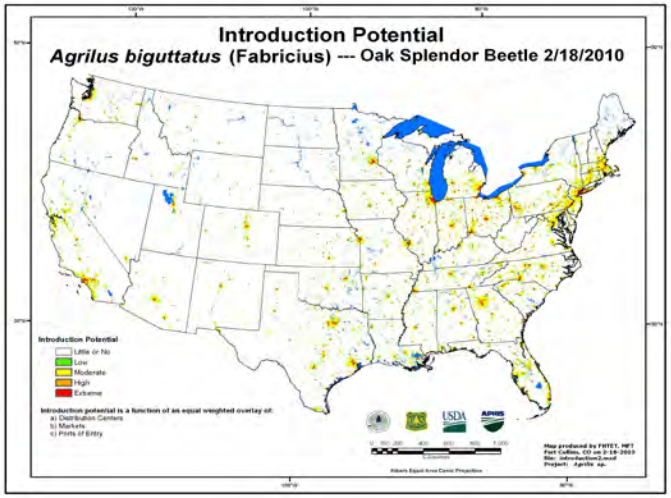
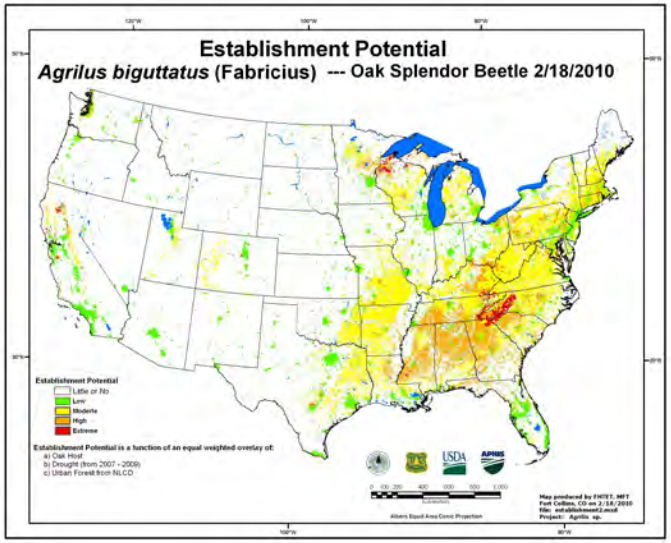


Agrilus biguttatus Establishment Potential



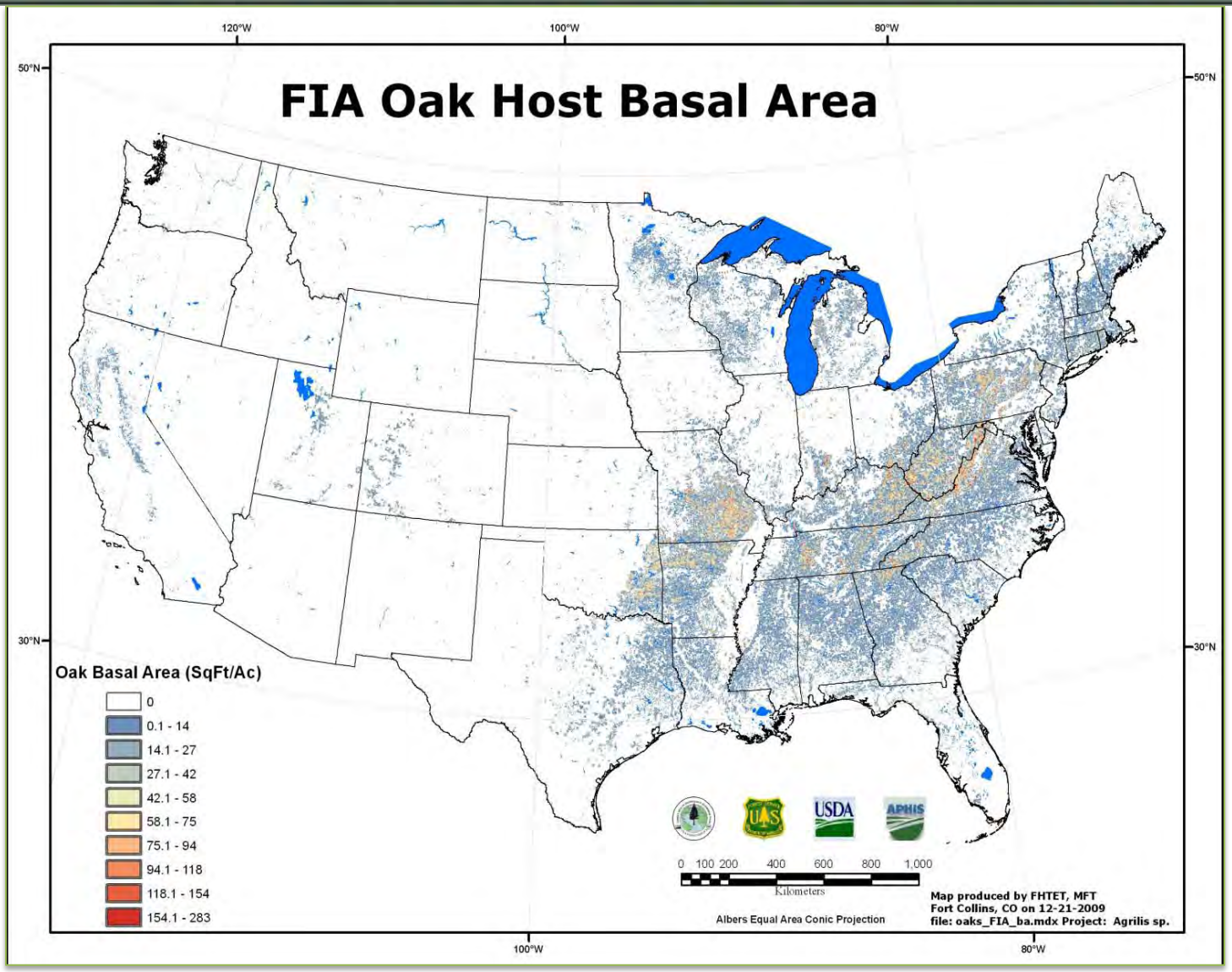


Introduction

= Susceptibility

Establishment

Agrilus biguttatus Establishment Potential



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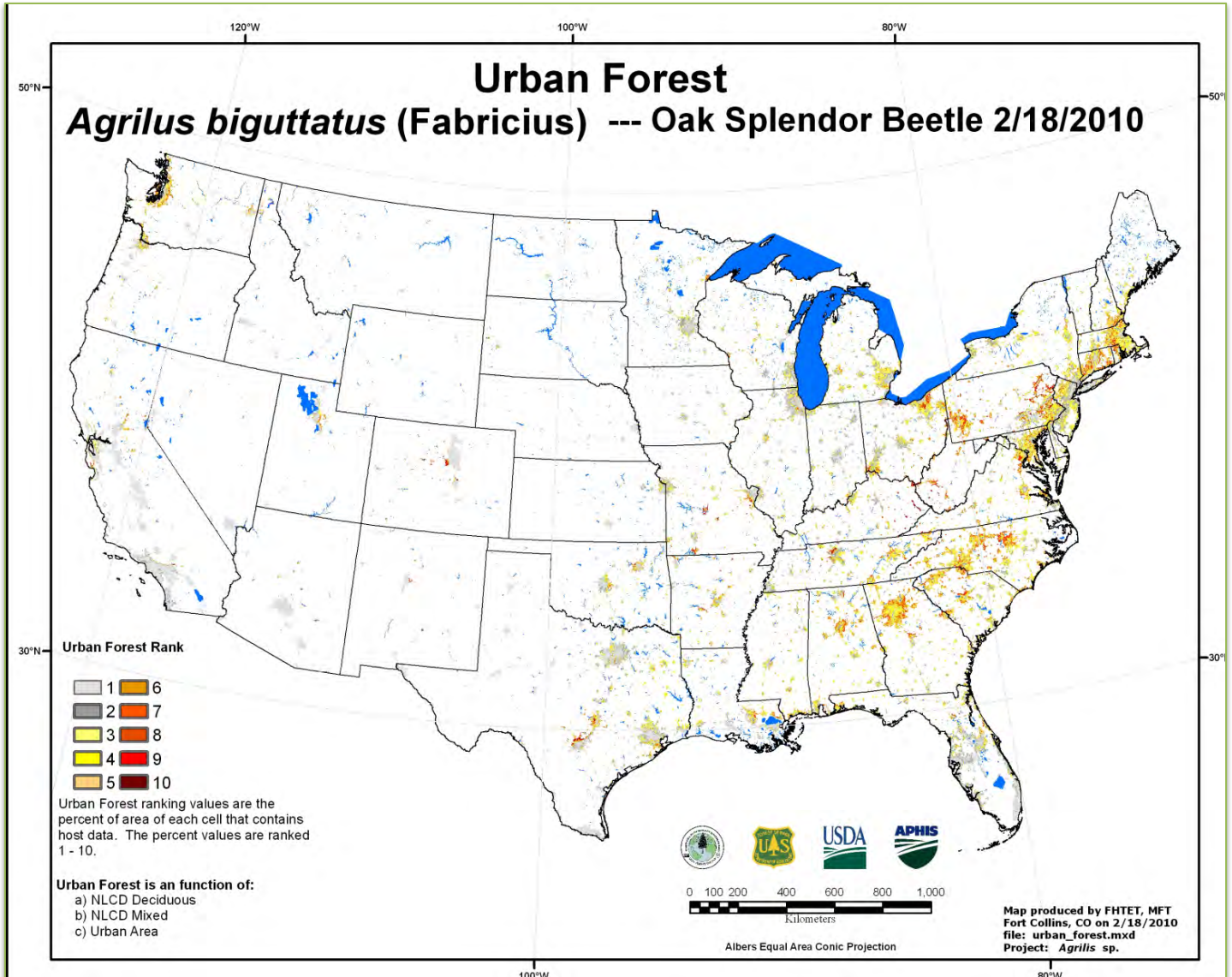

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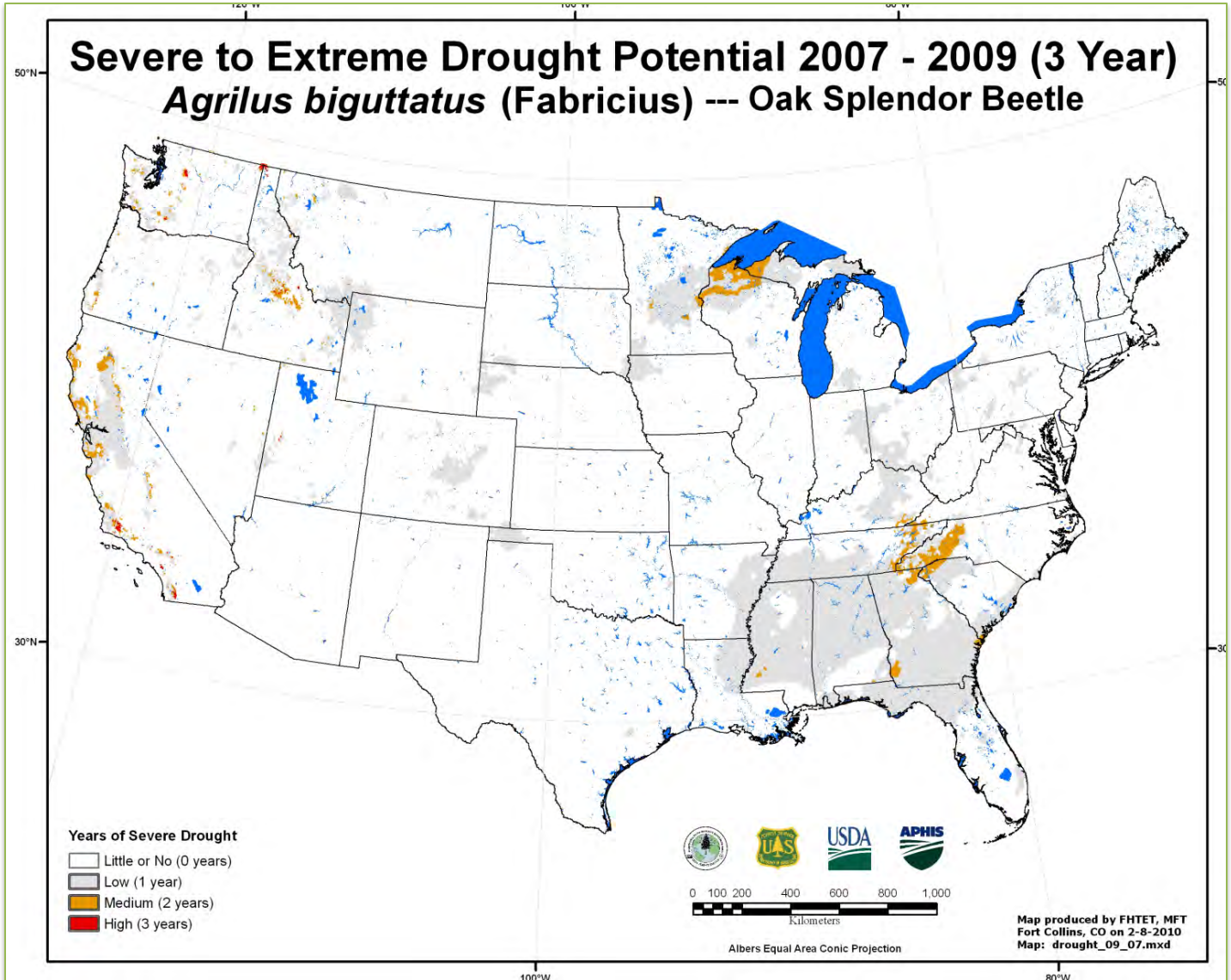
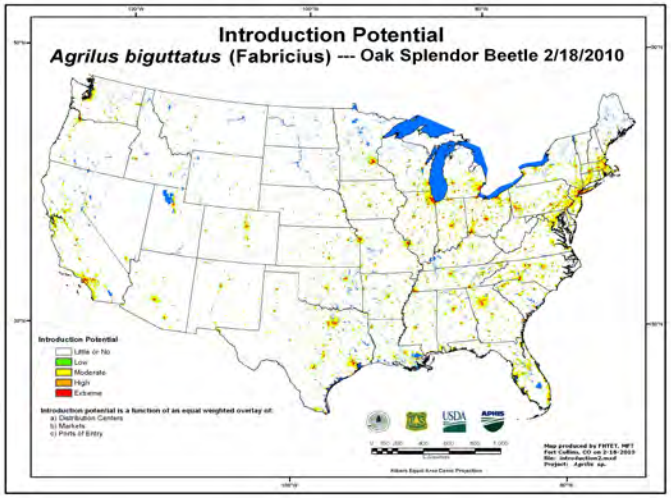
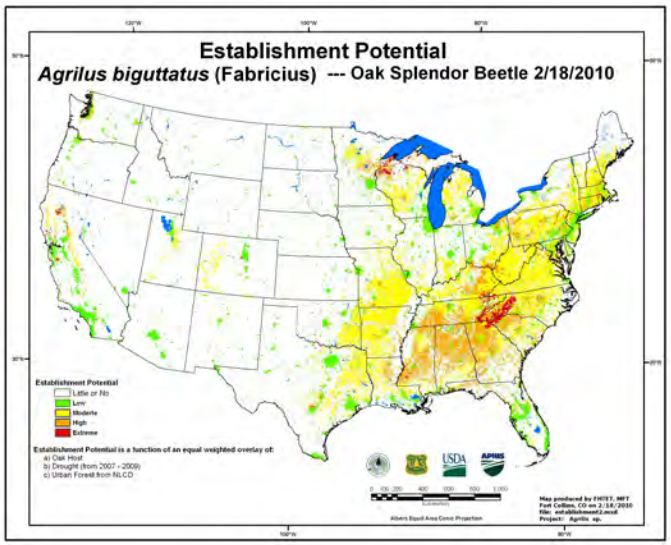


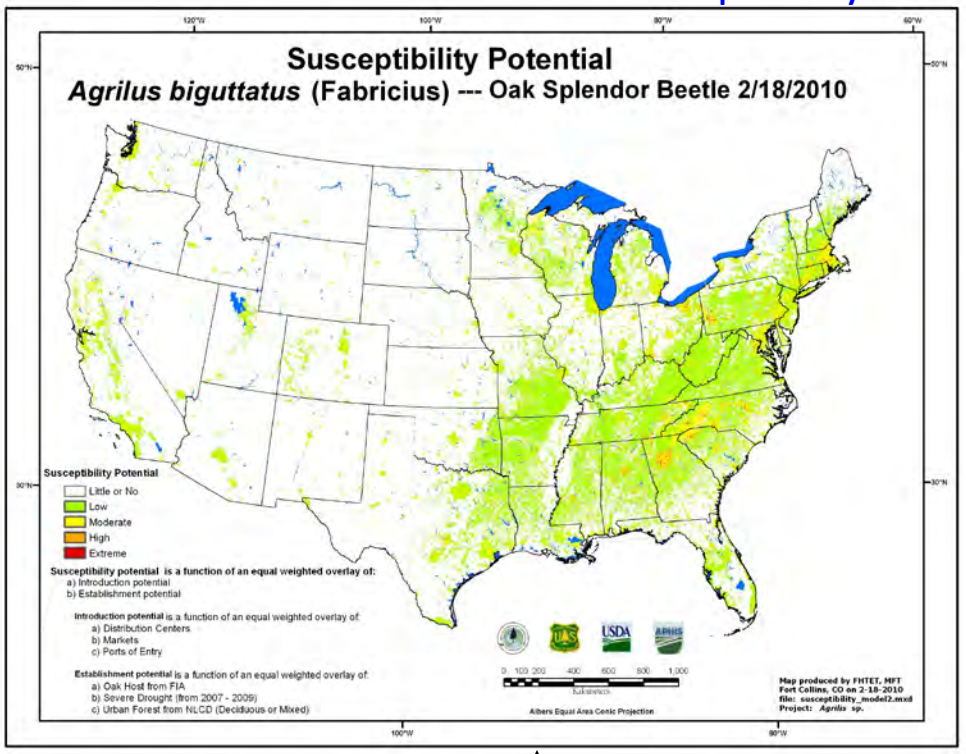
Agrilus biguttatus Susceptibility Potential





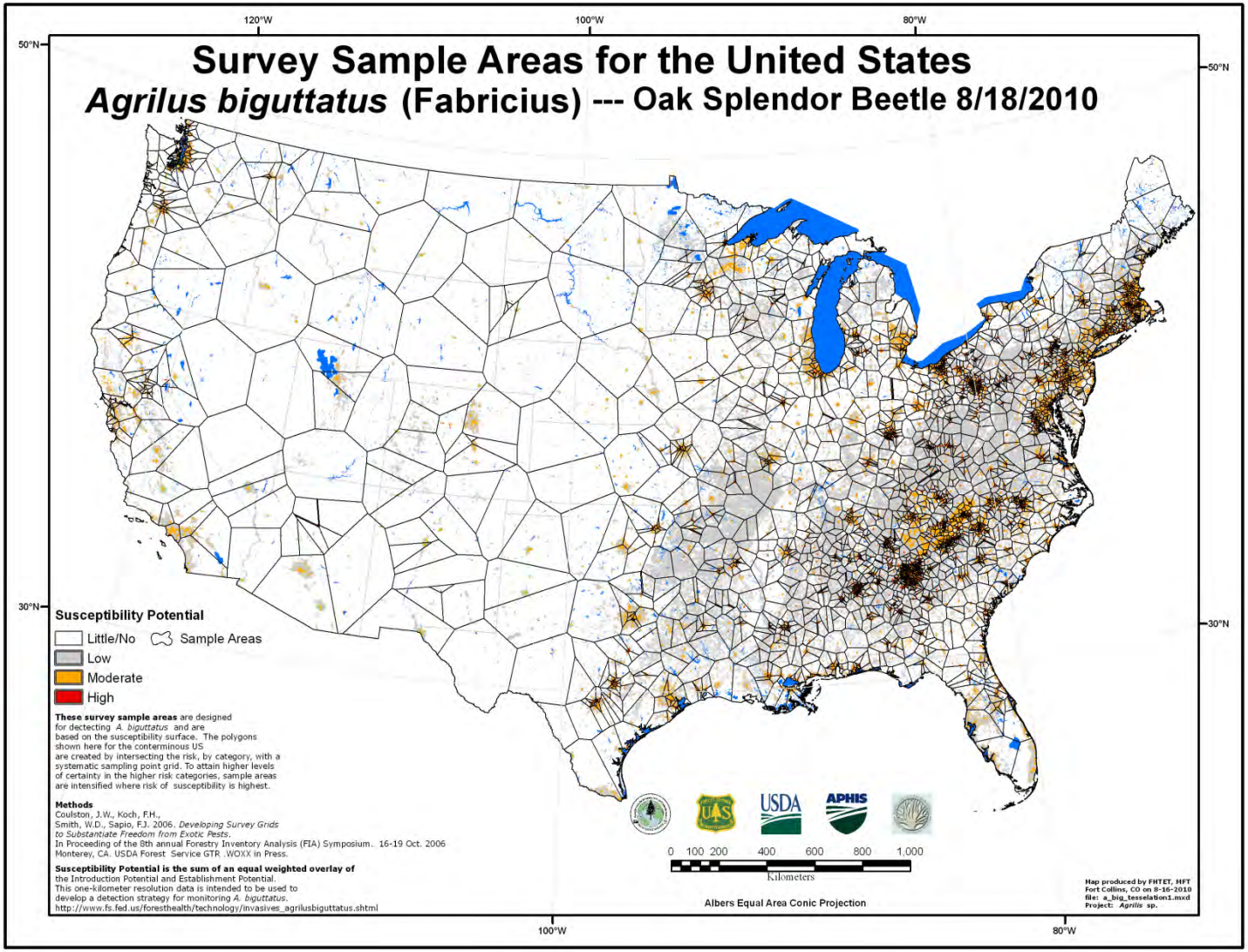
Introduction

= Susceptibility

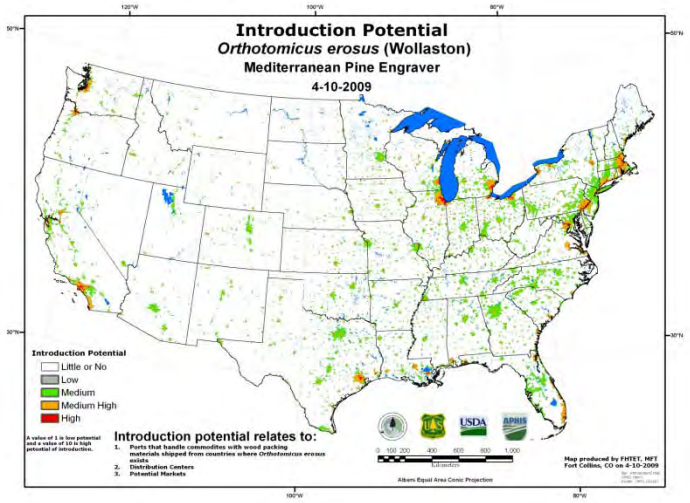


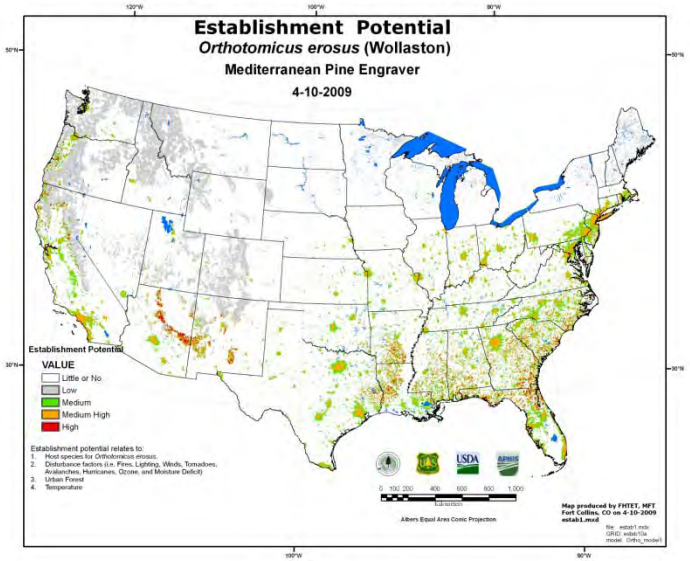
Establishment

Agrilus biguttatus Sampling Design



Orthotomicus erosus





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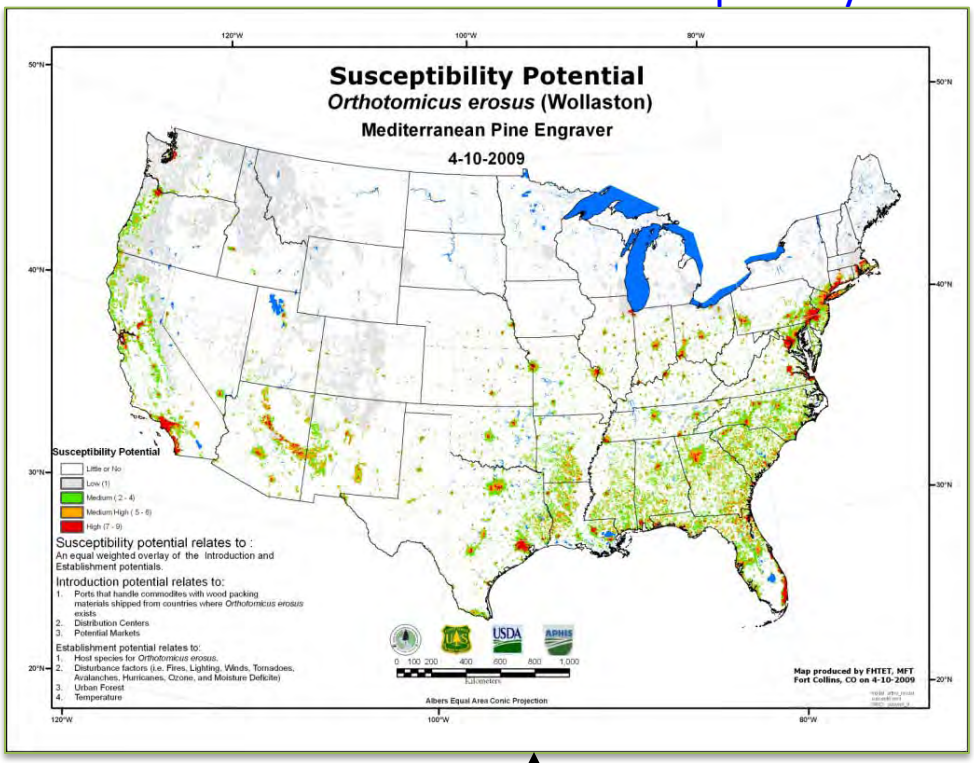
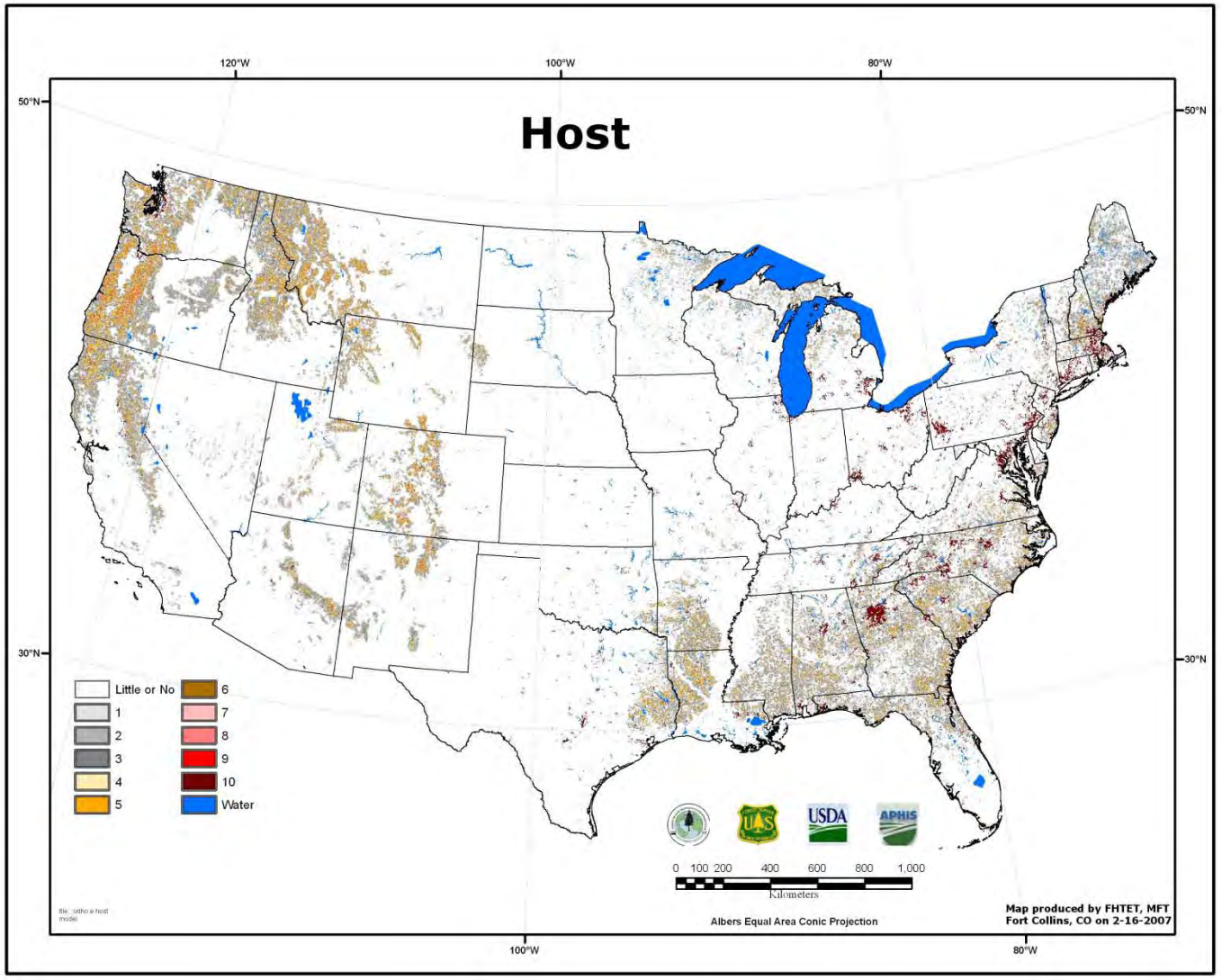


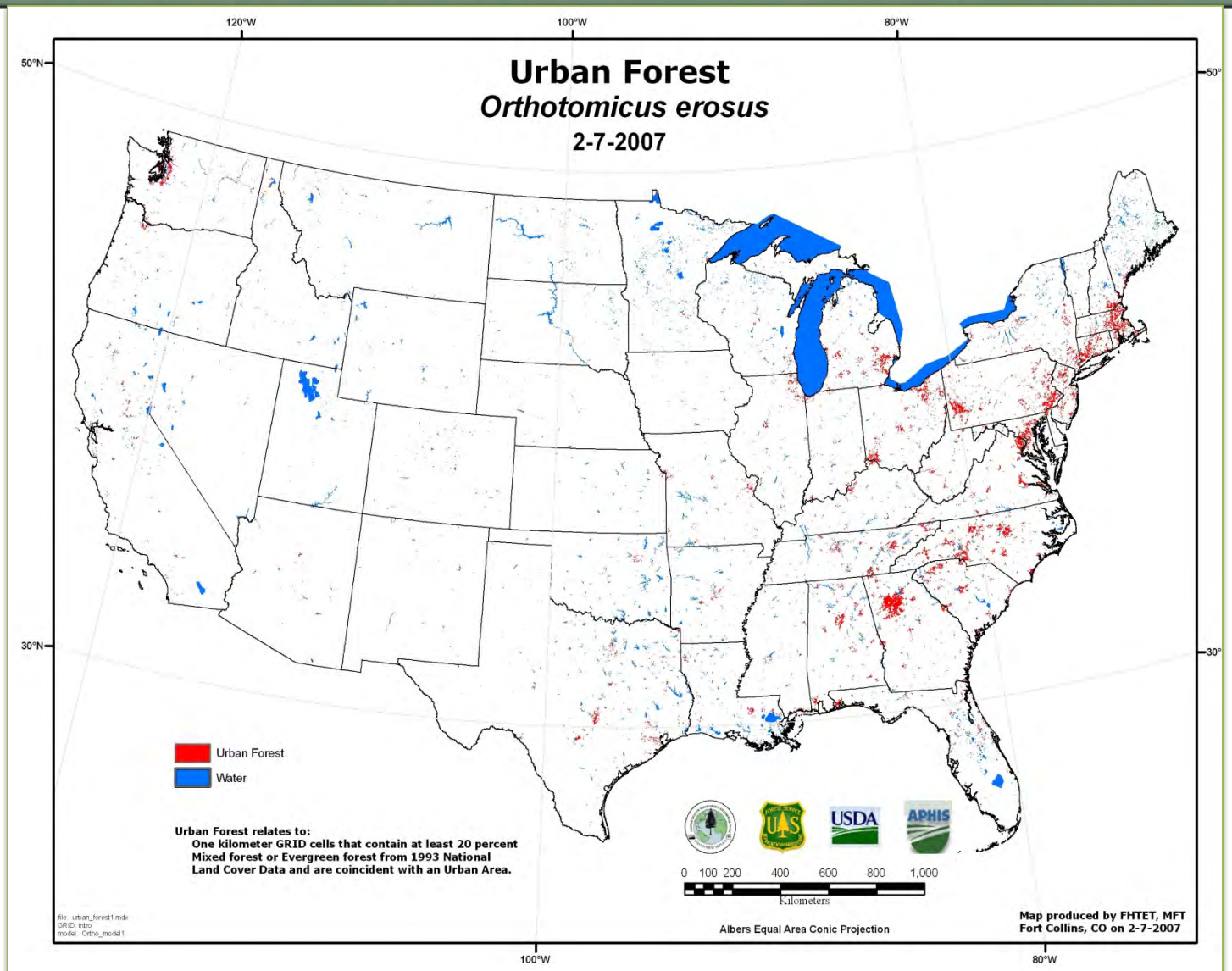
Establishment

Orthotomicus erosus

Orthotomicus erosus Establishment Potential



Orthotomicus erosus Establishment Potential



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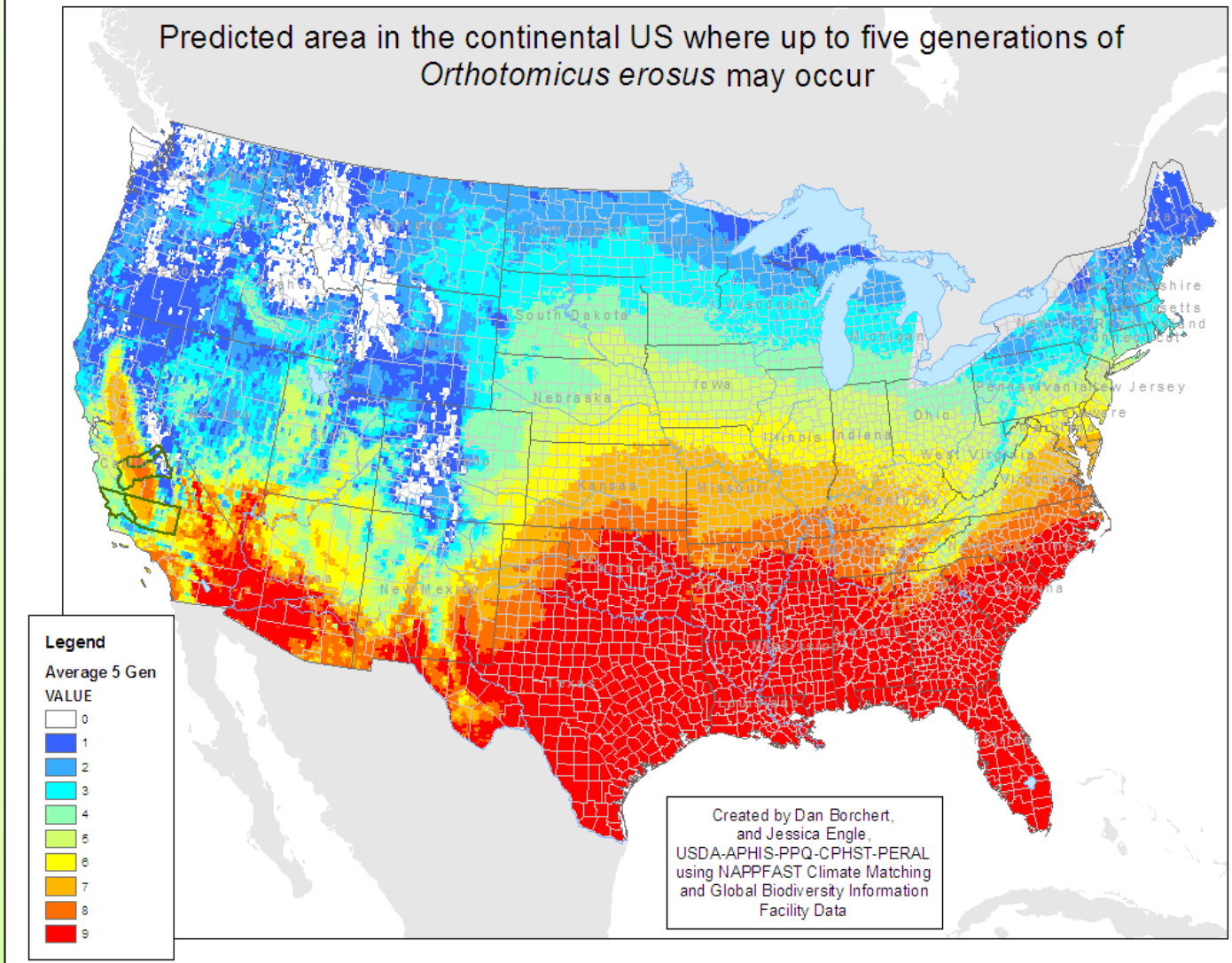

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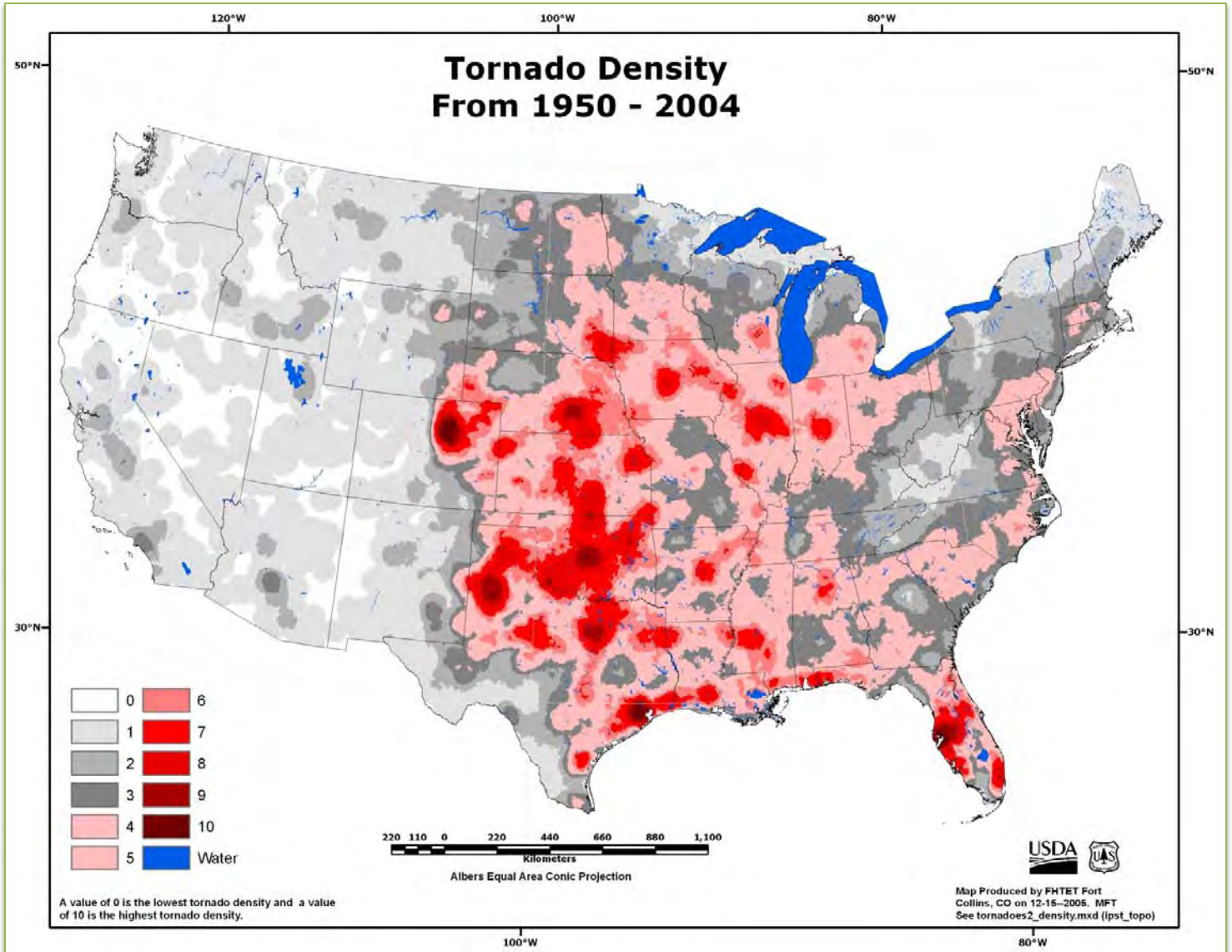

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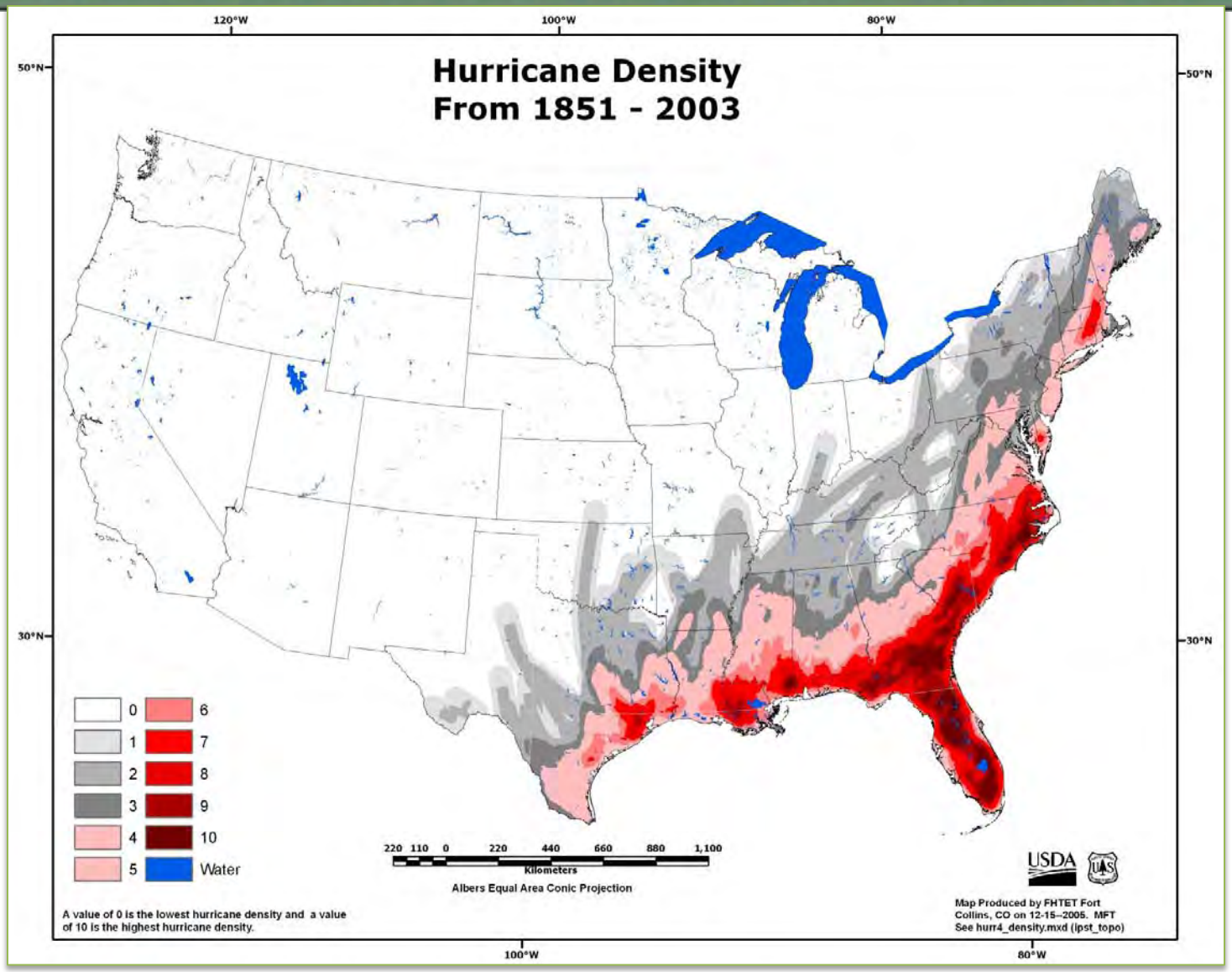

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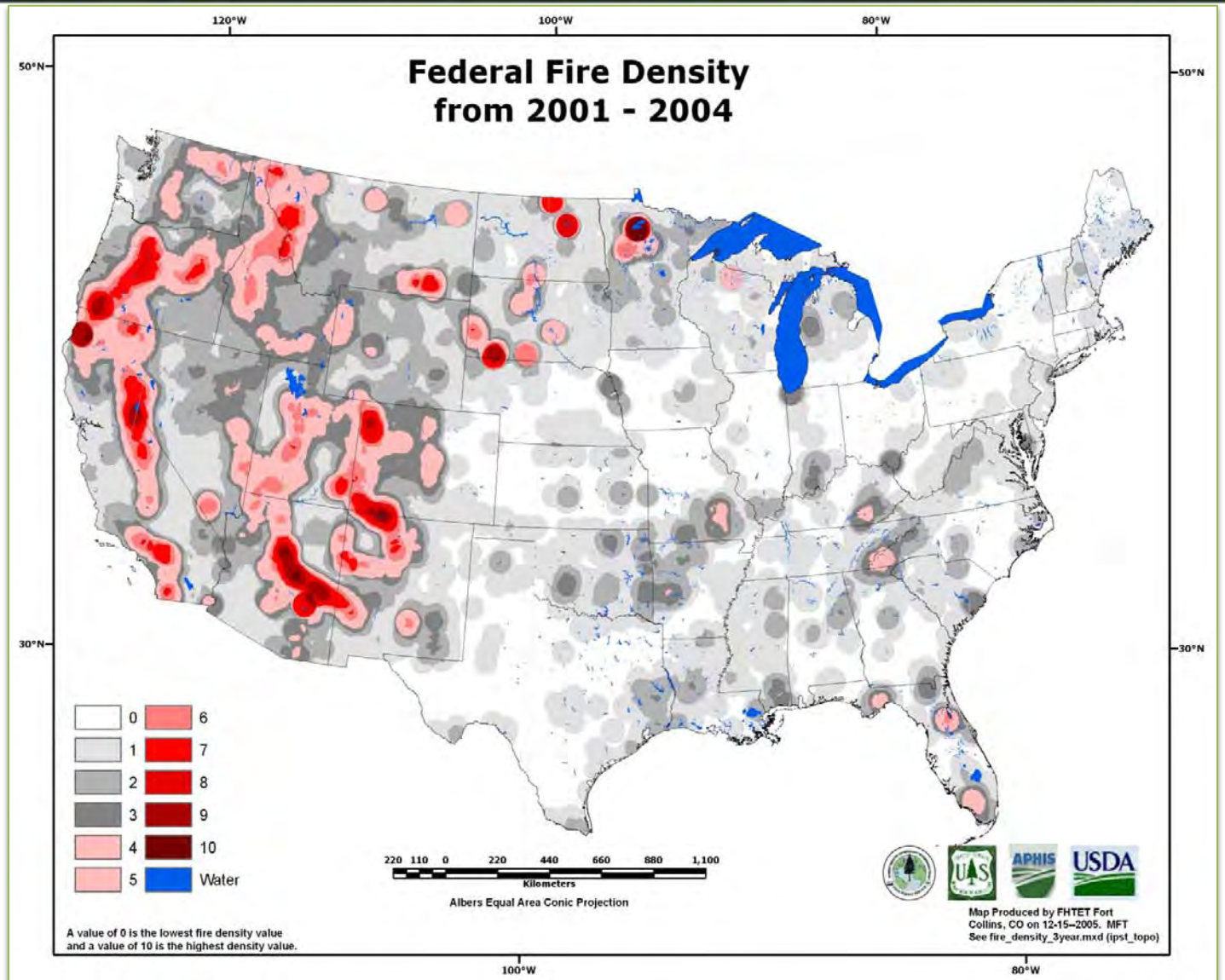

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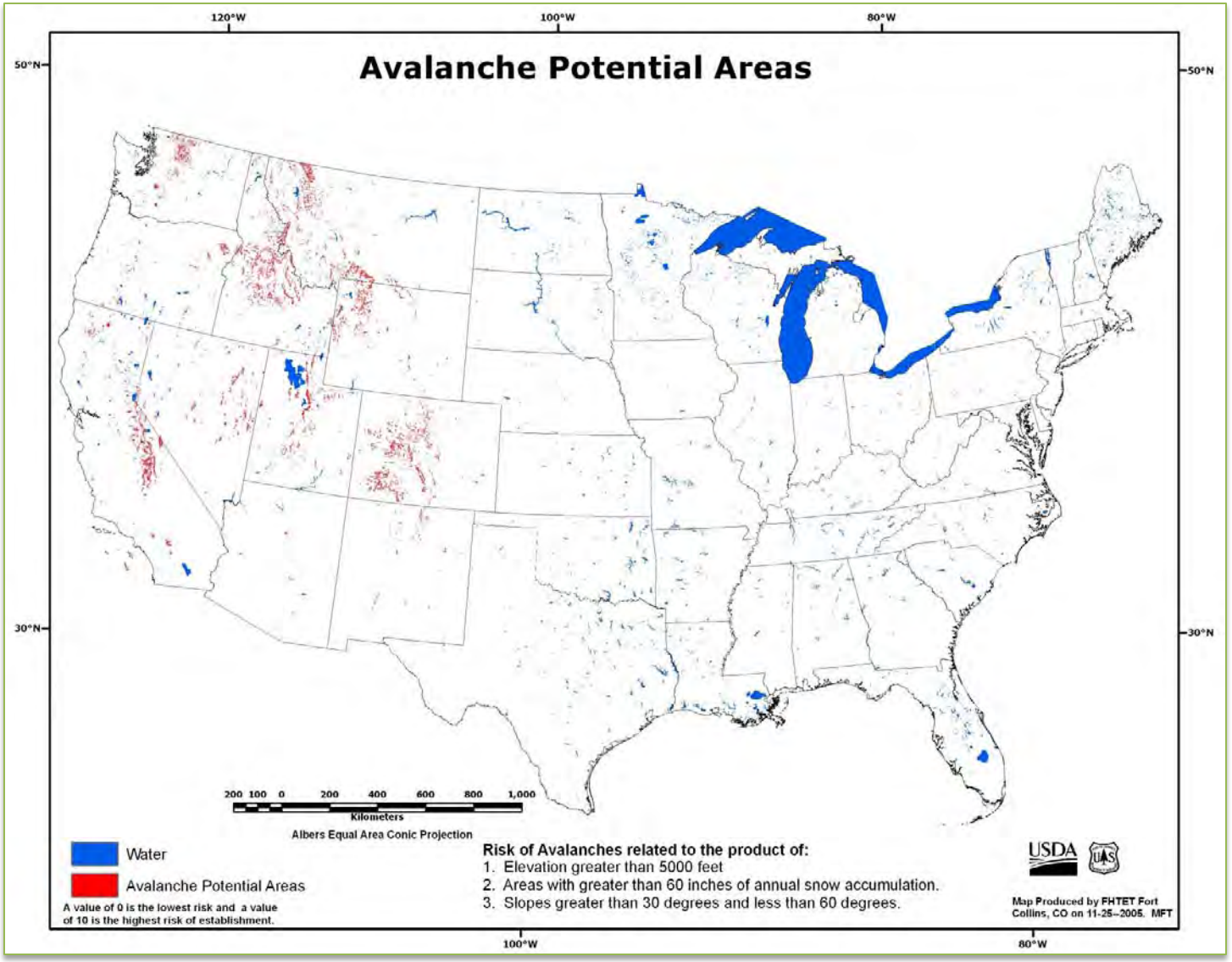

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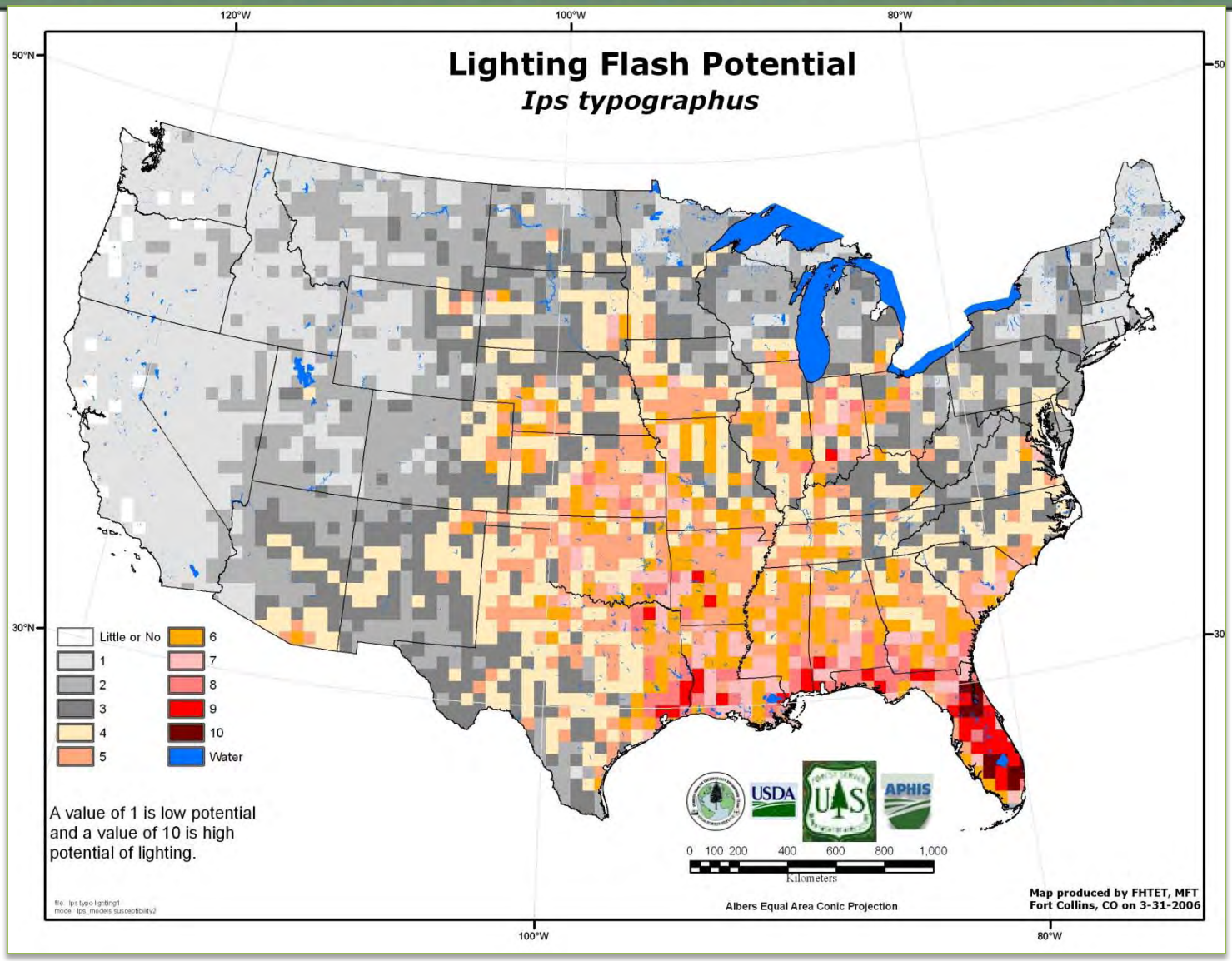
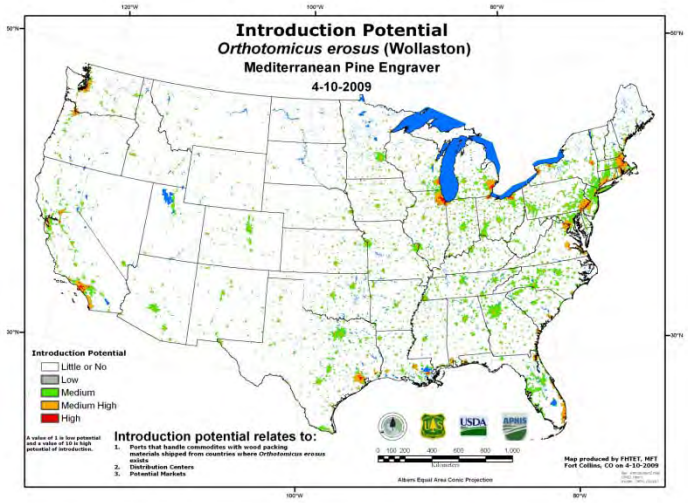
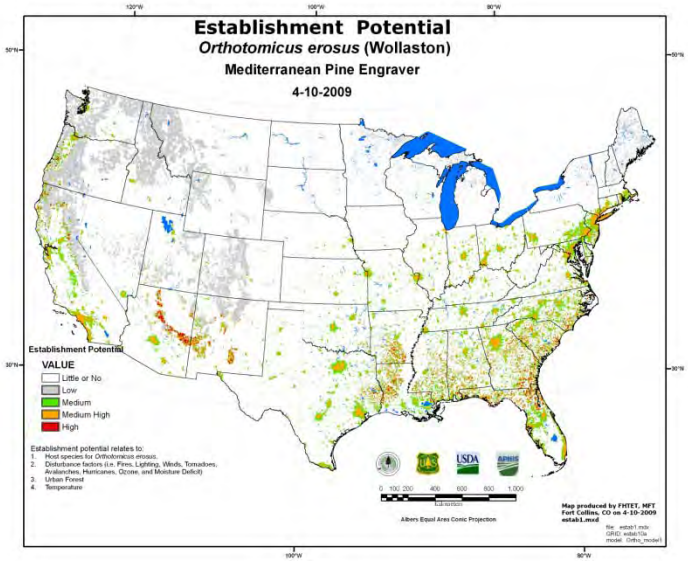


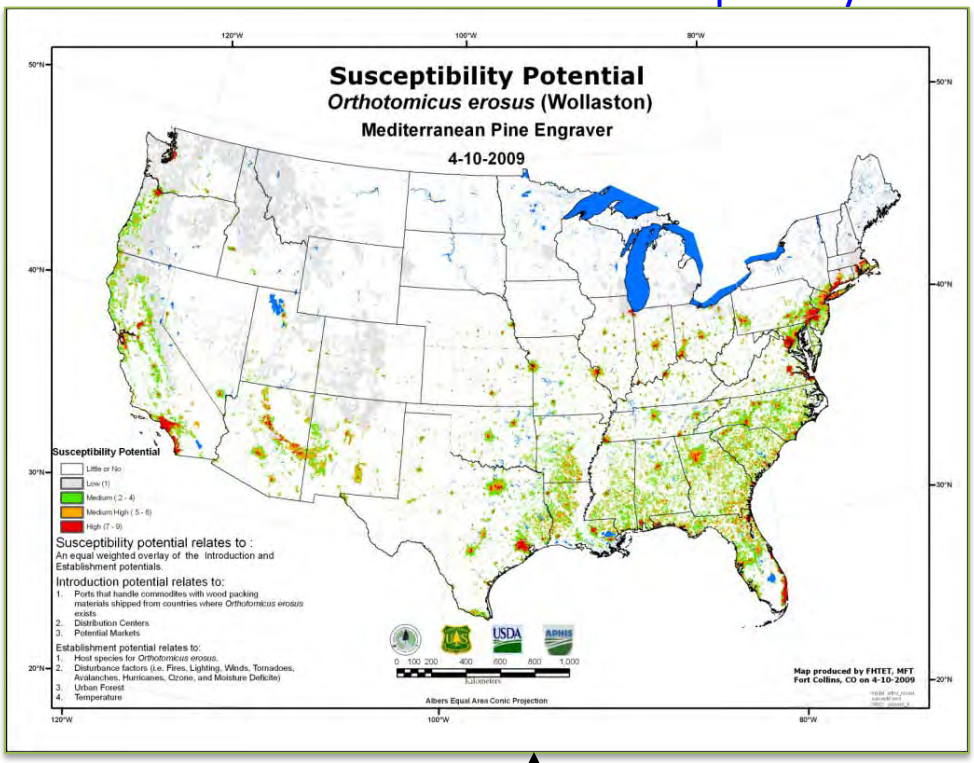
Orthotomicus erosus Example





Introduction

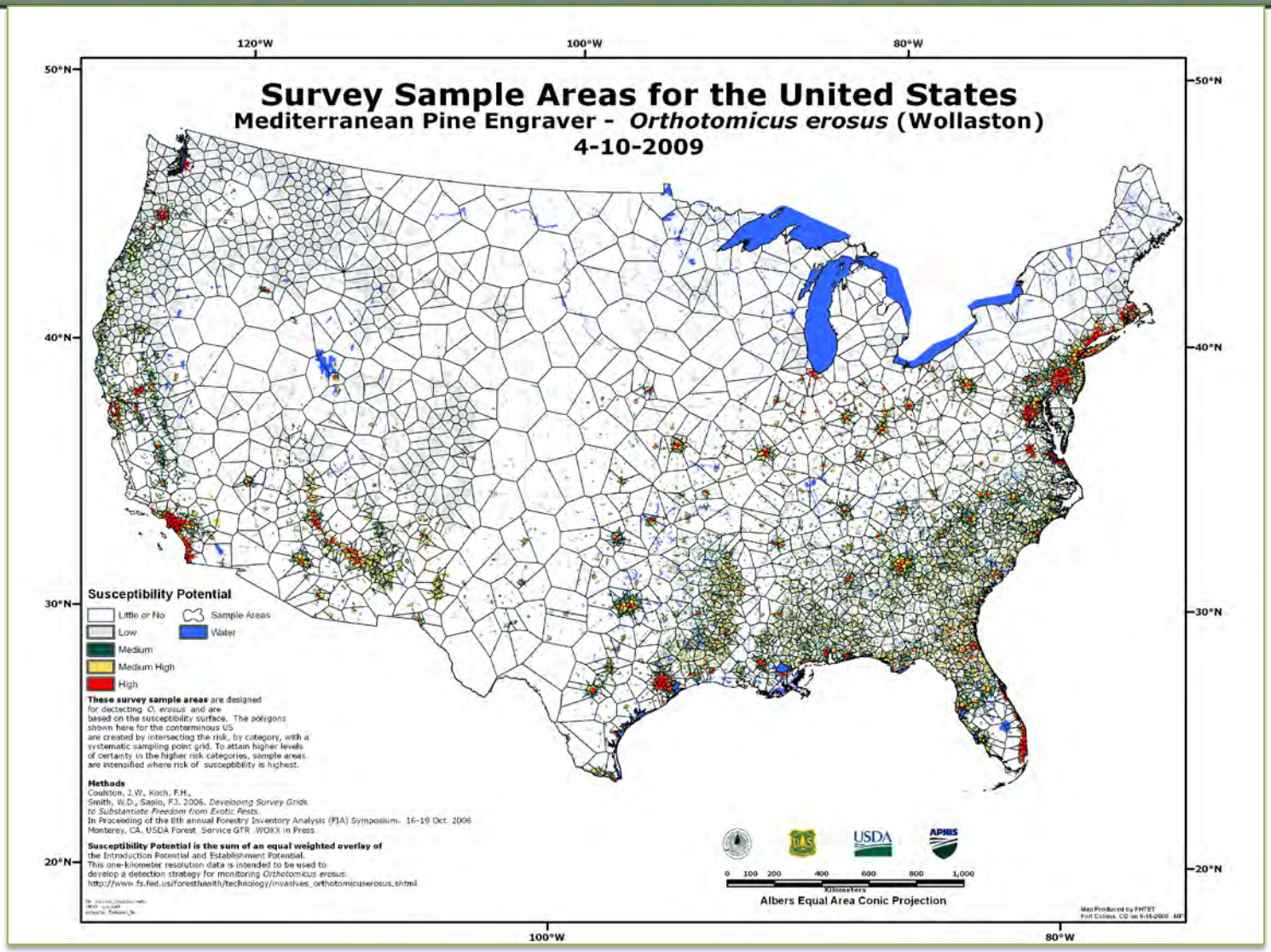
= Susceptibility



Orthotomicus erosus

Establishment

Orthotomicus erosus Sampling Design



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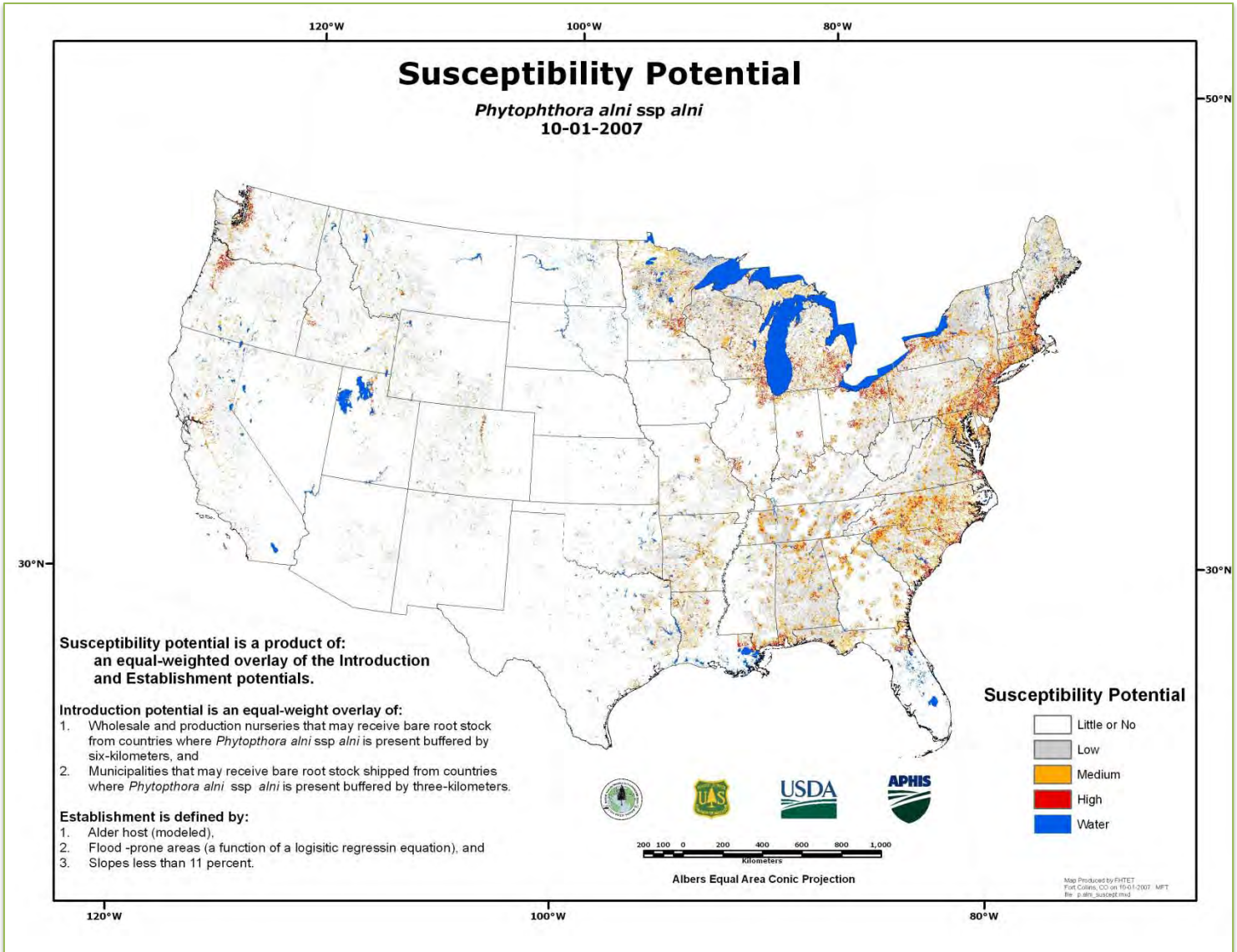
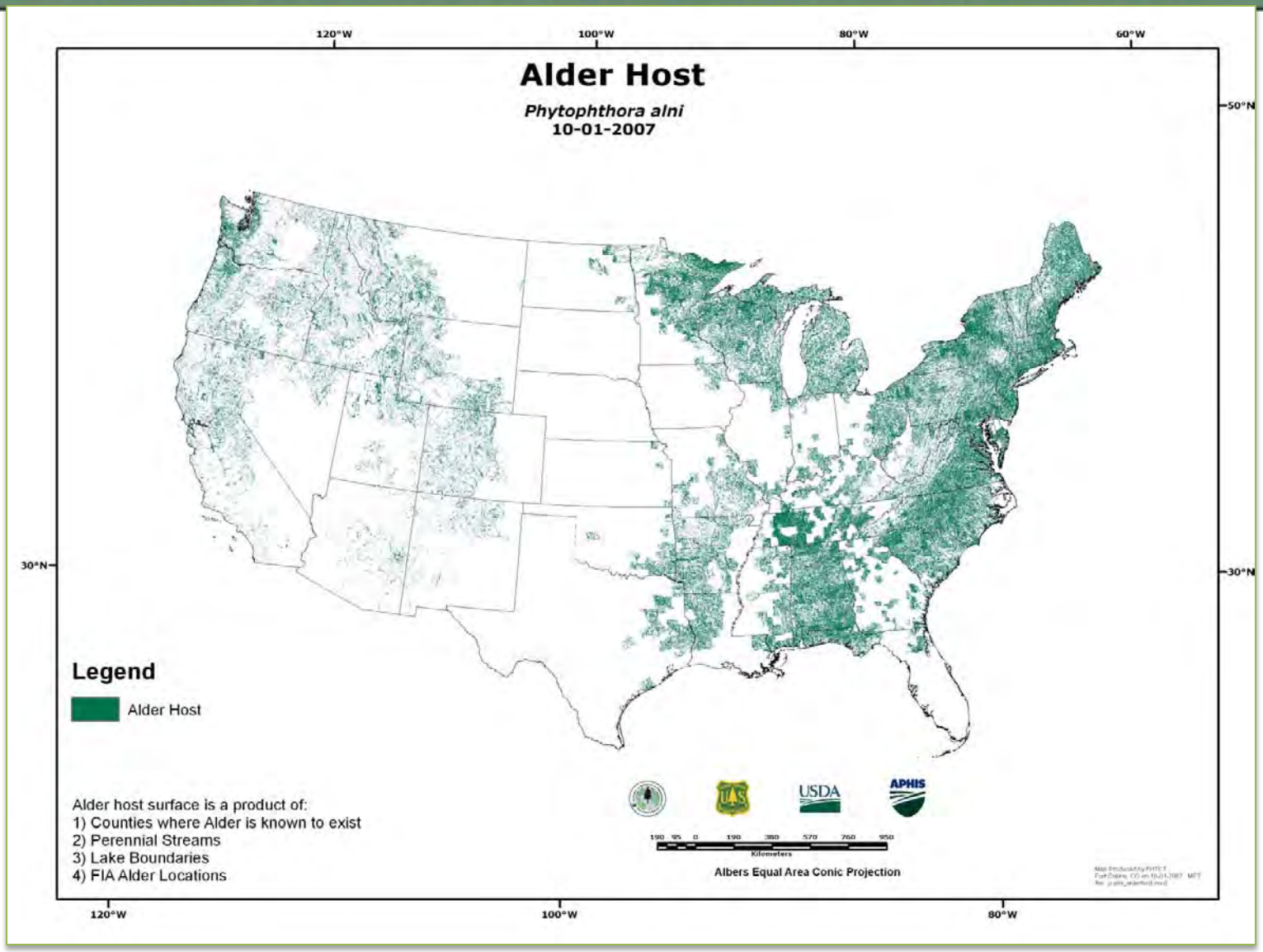
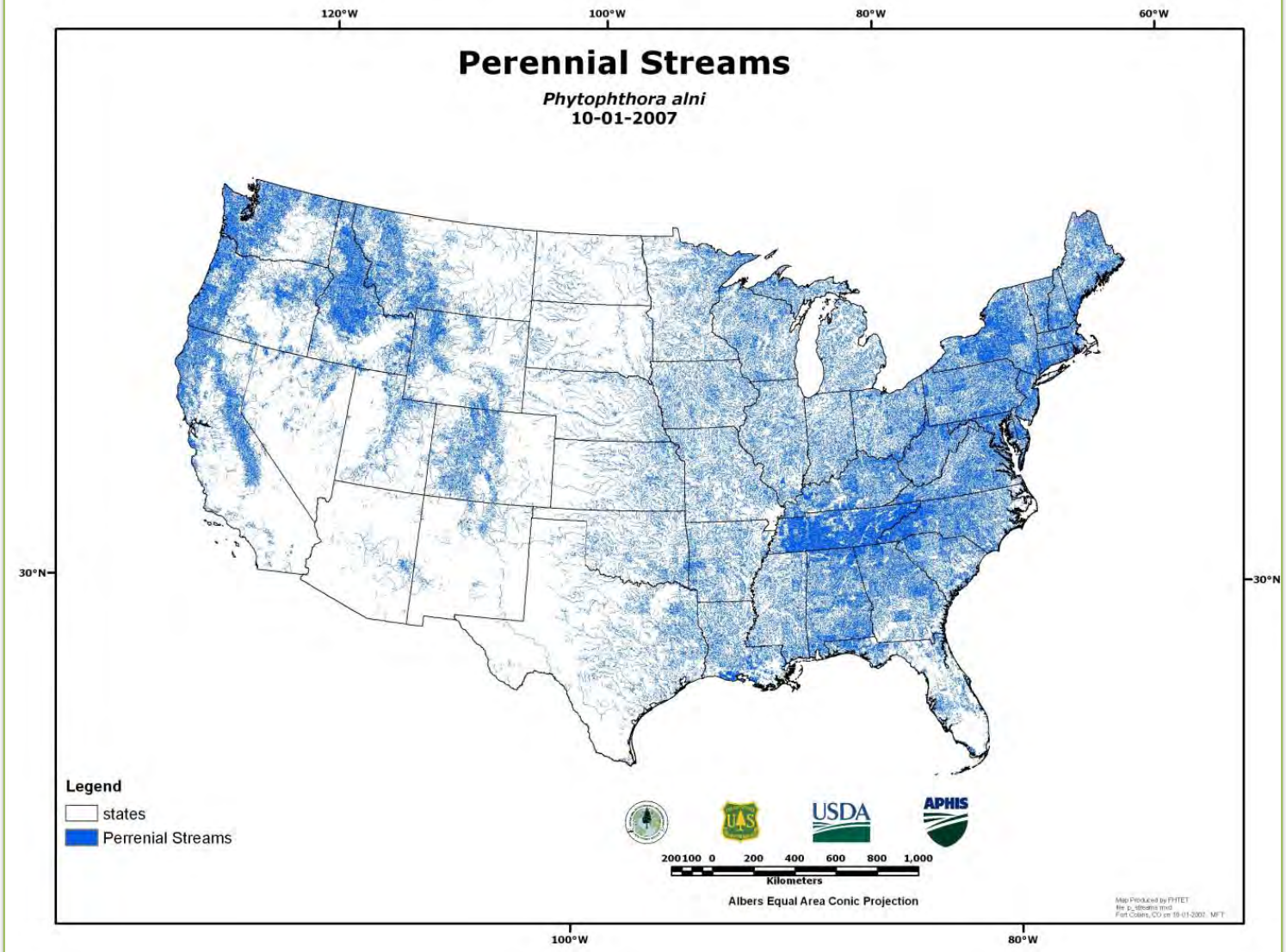
Phytophthora alni ssp. alni Susceptibility Potential



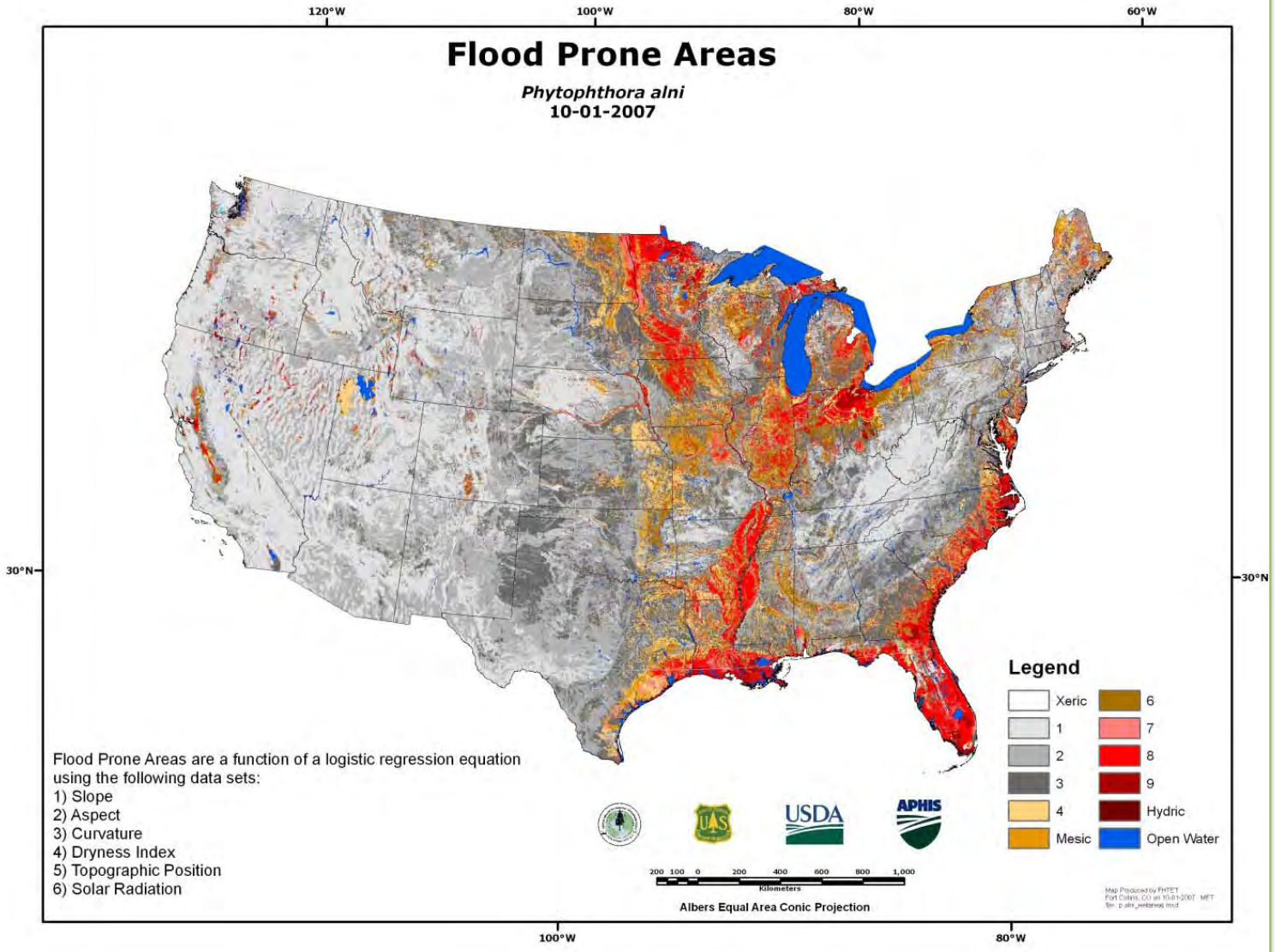
Phytophthora alni ssp. alni



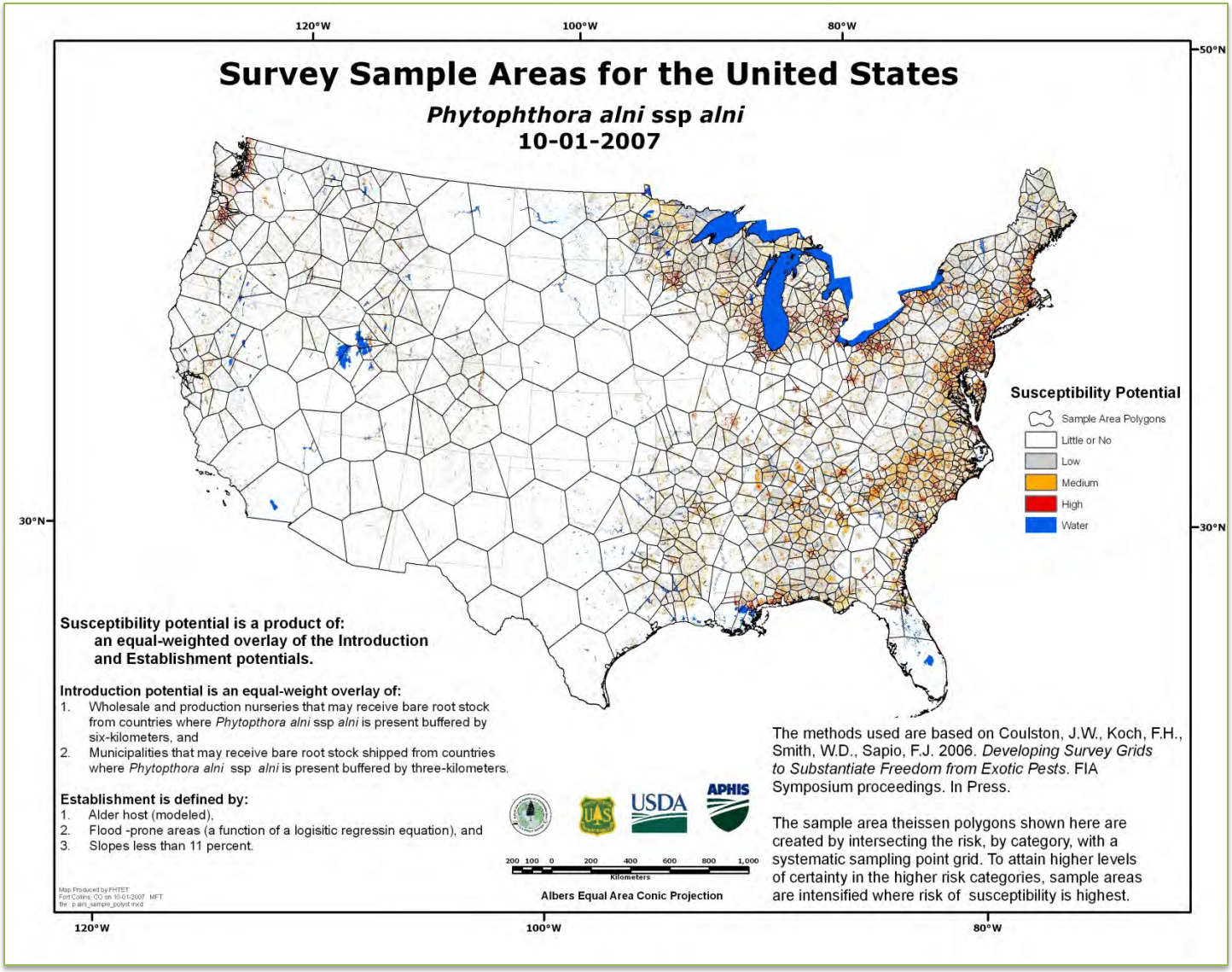
Phytophthora alni ssp. alni



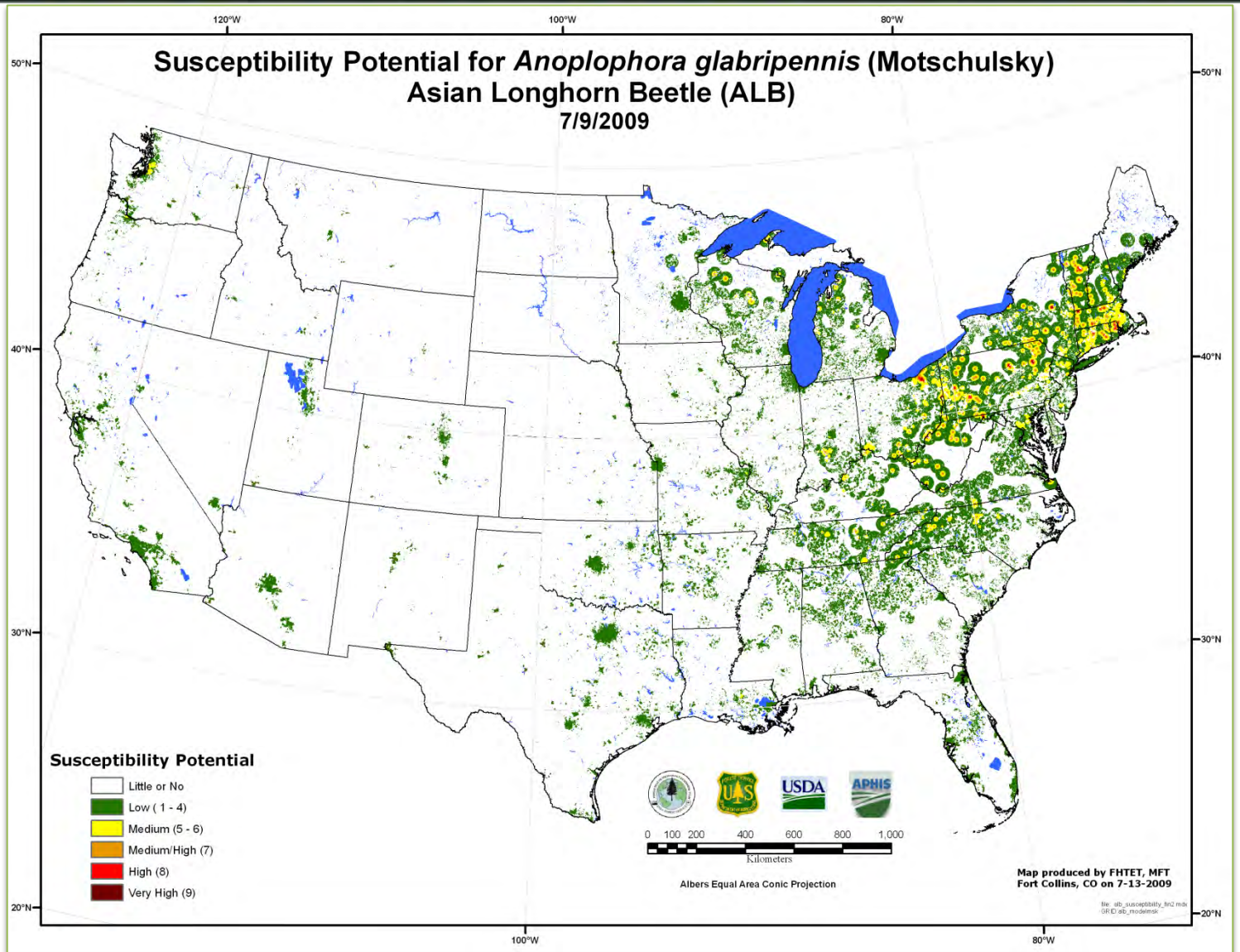
Phytophthora alni ssp. alni



Phytophthora alni ssp. alni

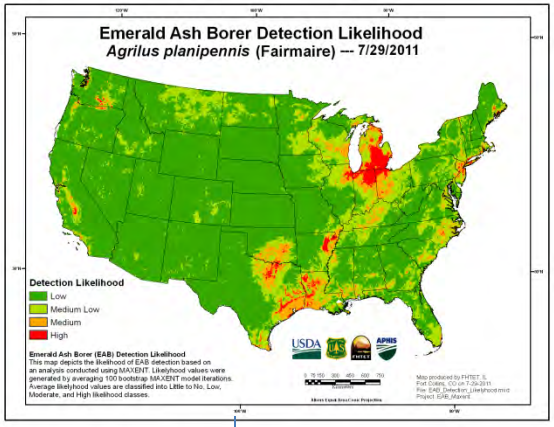


Anoplophora glabripennis

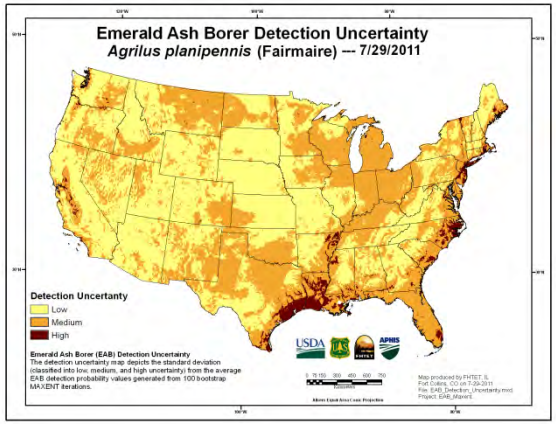


DRAFT *Agrilus planipennis*

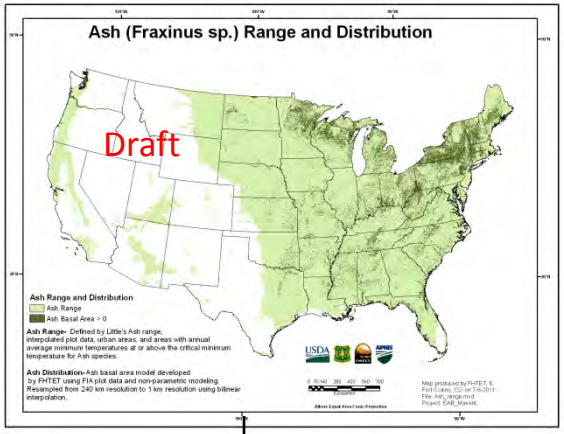
Detection Likelihood



Detection Uncertainty

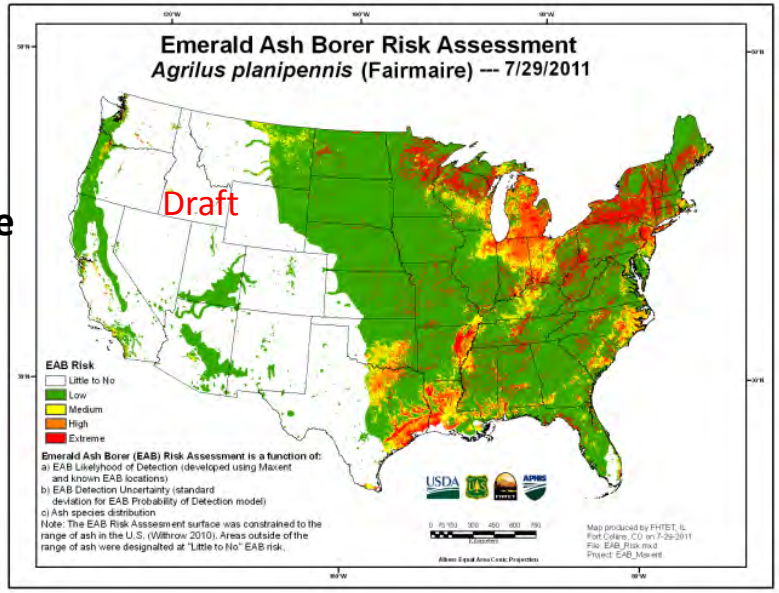


Ash Range & Distribution



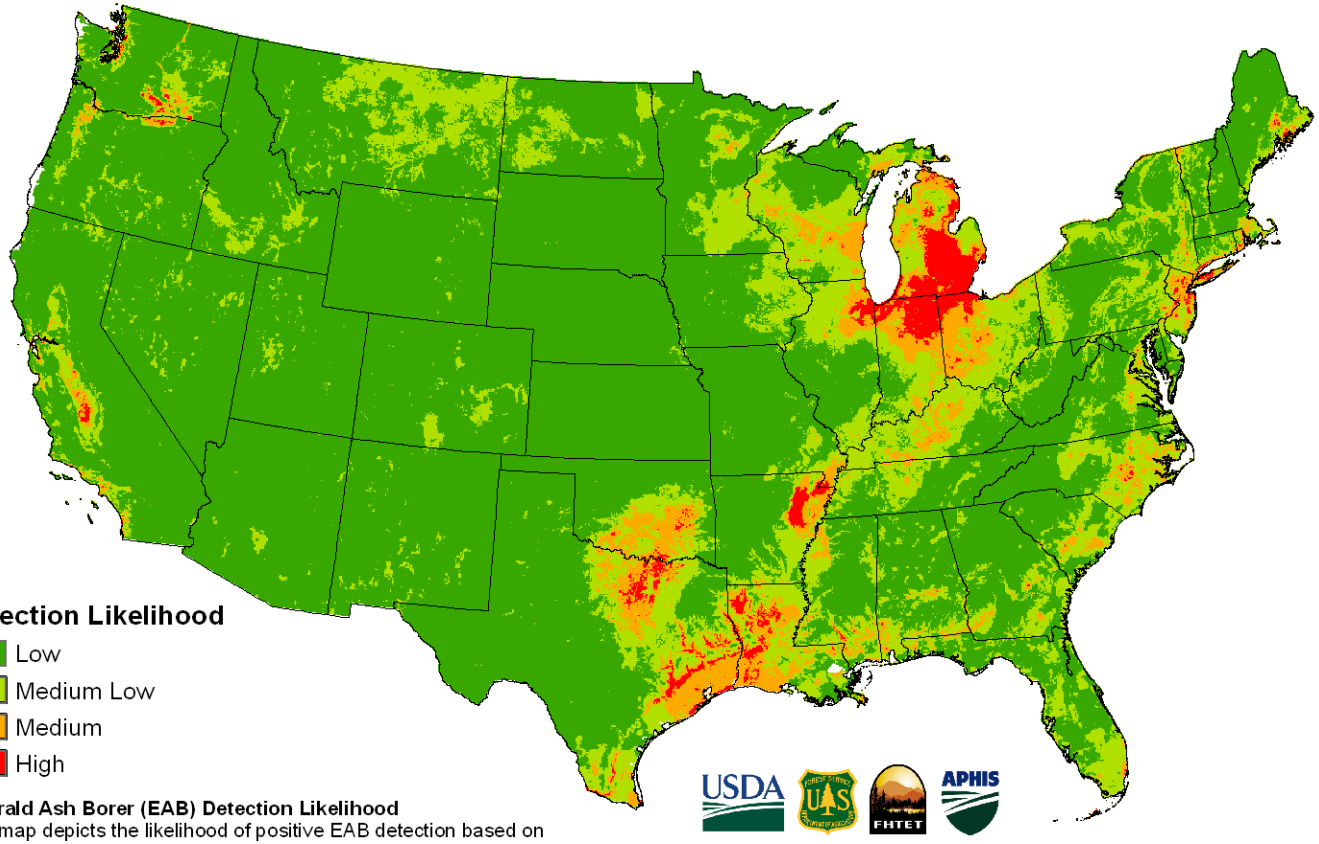
Emerald Ash Borer Risk =

Detection Likelihood + Uncertainty + Ash Range and presence



Emerald Ash Borer Detection Likelihood

Agrilus planipennis (Fairmaire) --- 7/29/2011



Emerald Ash Borer (EAB) Detection Likelihood
This map depicts the likelihood of positive EAB detection based on an analysis using MAXENT. Likelyhood values were generated by averaging 100 bootstrap MAXENT model iterations. Average likelyhood values are classified into: Low, Medium Low Medium, and High classes.

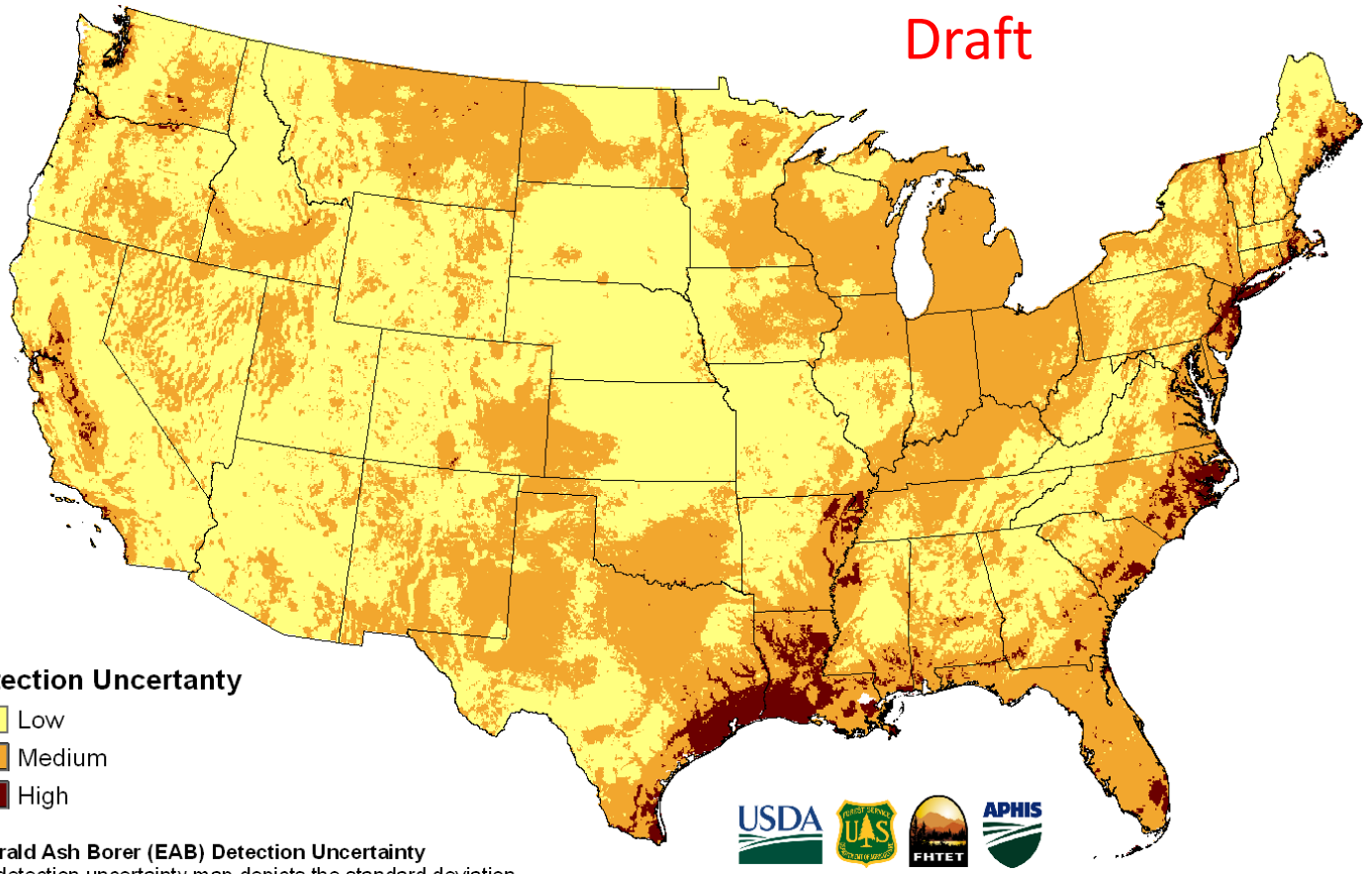
Map produced by FHTET, IL
Fort Collins, CO on 7-29-2011
File: EAB_Detection_Likelihood.mxd
Project: EAB_Maxent.

The Invasive Species Information Program (ISI)

Emerald Ash Borer Detection Uncertainty

Agrilus planipennis (Fairmaire) --- 7/29/2011

Draft

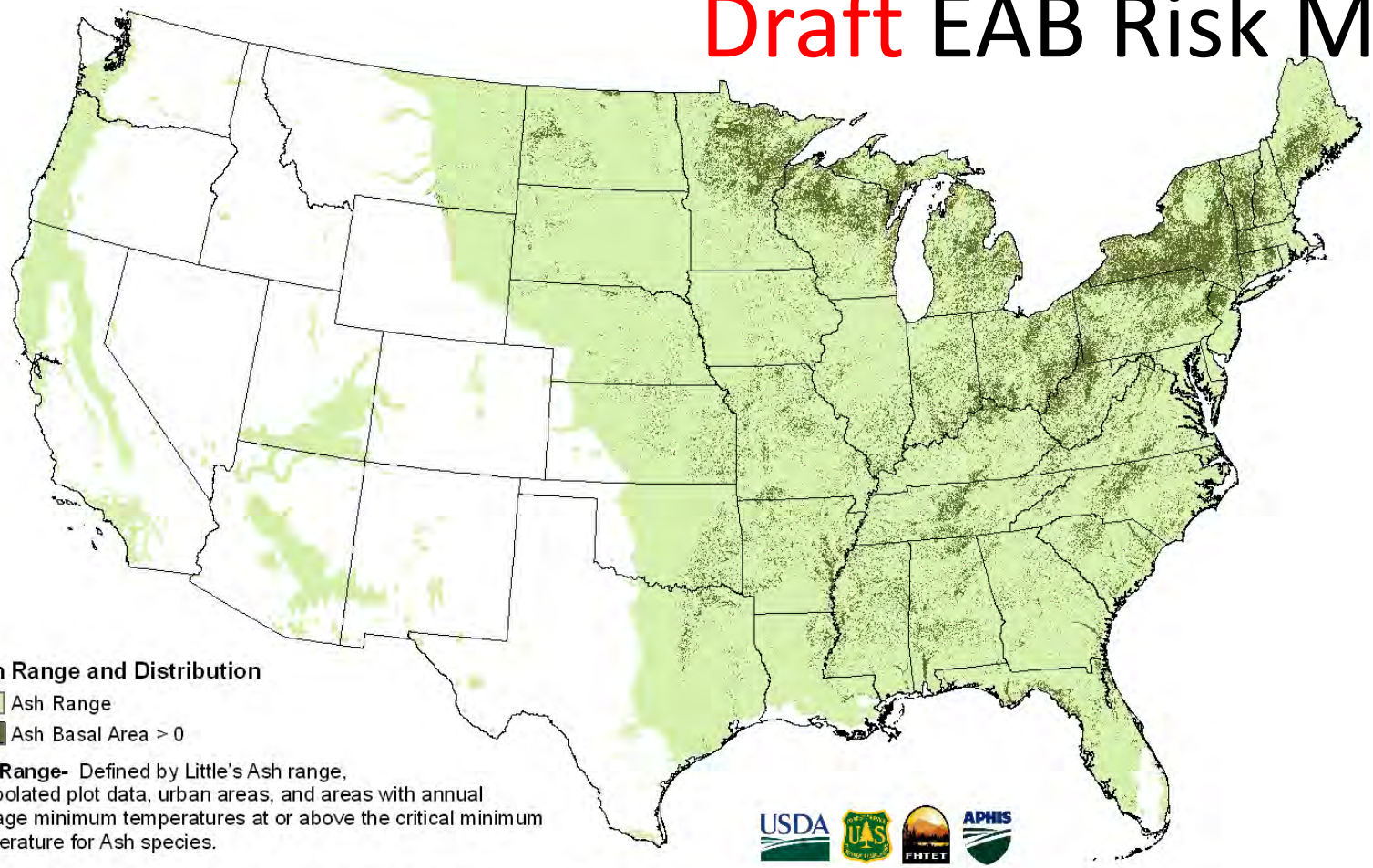


Emerald Ash Borer (EAB) Detection Uncertainty
The detection uncertainty map depicts the standard deviation (classified into low, medium, and high uncertainty) from the average EAB detection probability values generated from 100 bootstrap MAXENT iterations.

Map produced by FHTET, IL
Fort Collins, CO on 7-29-2011
File: EAB_Detection_Uncertainty.mxd
Project: EAB_Maxent.

The Invasive Species Information Program (ISIP)

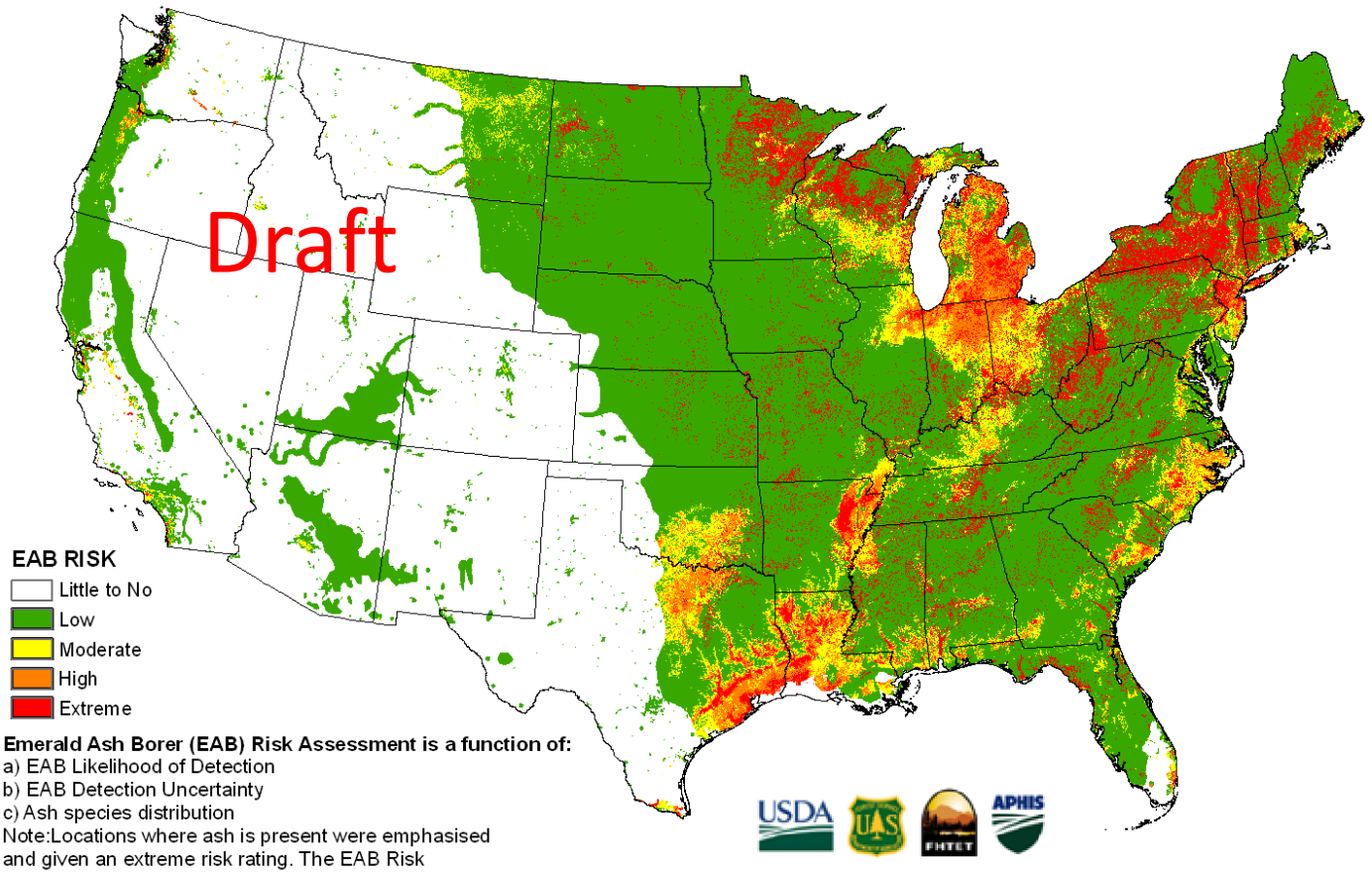
Draft EAB Risk Map



The Invasive Species Information Program (ISI)

Emerald Ash Borer Risk Assessment

Agrilus planipennis **(Fairmaire) --- 7/29/2011**

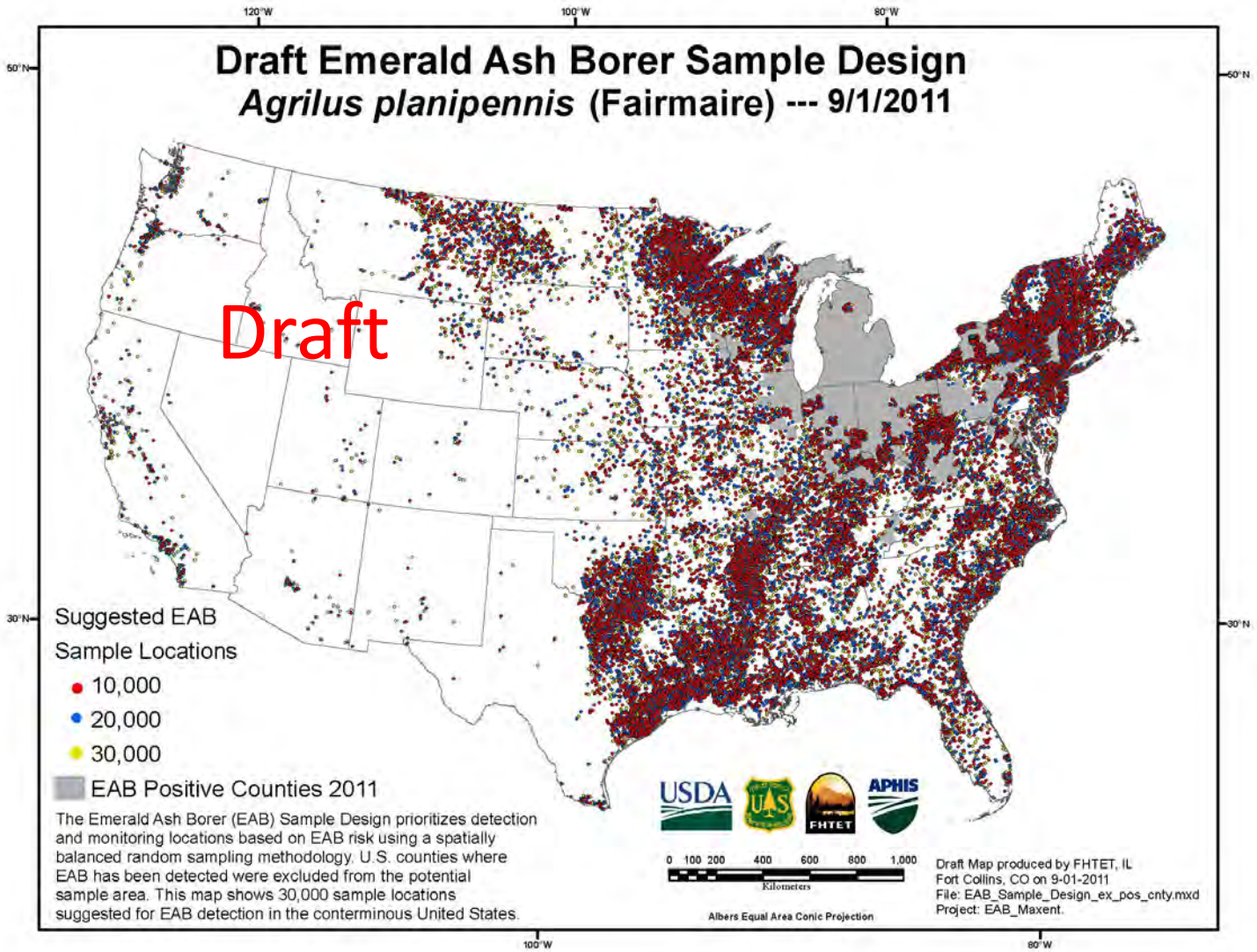


Emerald Ash Borer (EAB) Risk Assessment is a function of:
a) EAB Likelihood of Detection
b) EAB Detection Uncertainty
c) Ash species distribution
Note:Locations where ash is present were emphasised and given an extreme risk rating. The EAB Risk Assessment surface was constrained to the range of ash in the U.S. (Withrow 2010). Areas outside of the ash range were designated as "Little to No" EAB risk.

Map produced by FHTET, IL
Fort Collins, CO on 7-29-2011
File: EAB_Risk2.mxd
Project: EAB_Maxent.

Draft Emerald Ash Borer Sample Design

Agrilus planipennis (Fairmaire) --- 9/1/2011



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