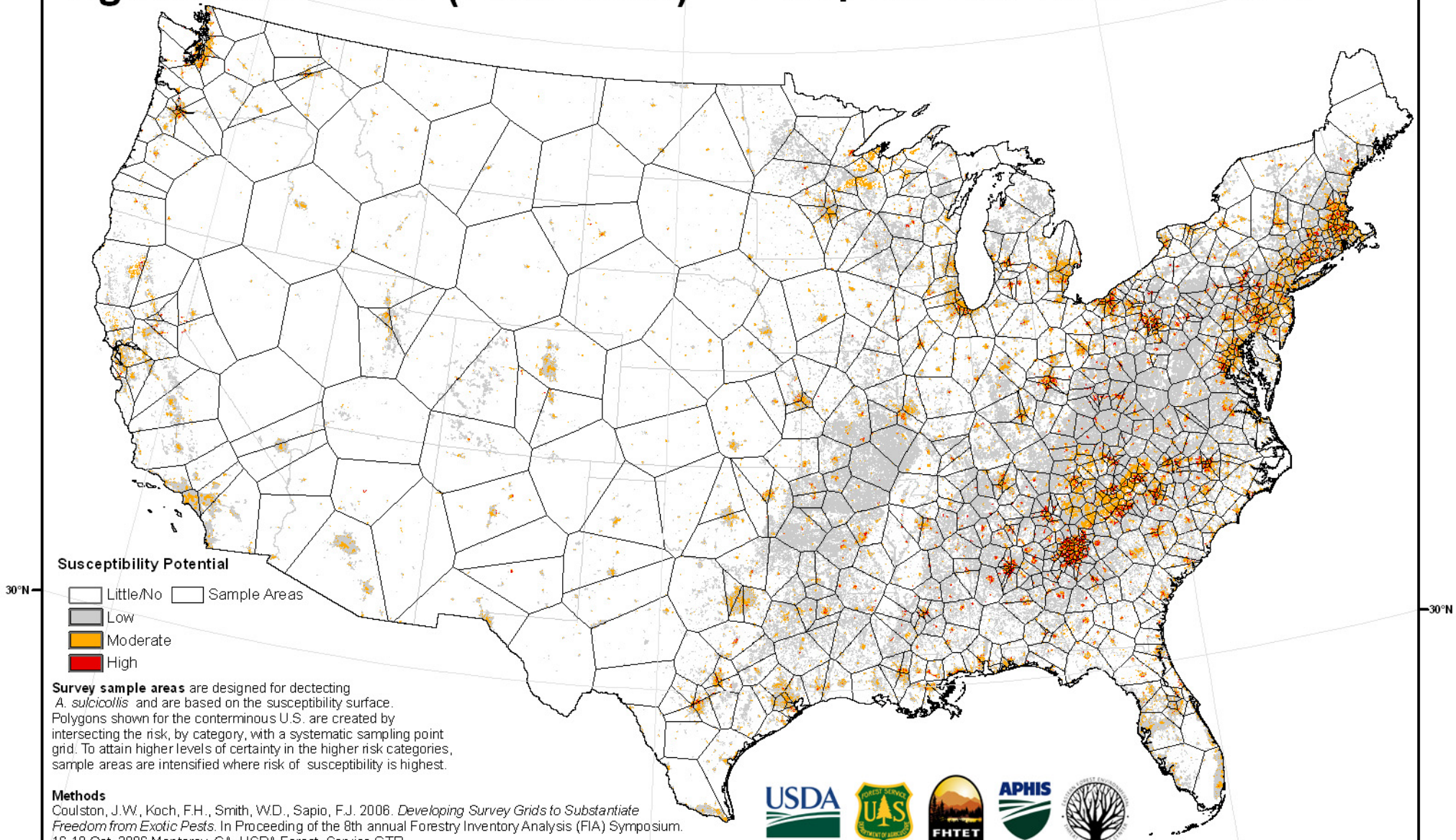


Survey Sample Areas for the United States

Agrilus sulcicollis (Lacordaire) --- European Oak Borer 2/14/2011



Susceptibility Potential

- Little/No
- Low
- Moderate
- High
- Sample Areas

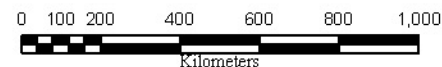
Survey sample areas are designed for detecting *A. sulcicollis* and are based on the susceptibility surface. Polygons shown for the conterminous U.S. are created by intersecting the risk, by category, with a systematic sampling point grid. To attain higher levels of certainty in the higher risk categories, sample areas are intensified where risk of susceptibility is highest.

Methods

Coulston, J.W., Koch, F.H., Smith, W.D., Sapio, F.J. 2006. *Developing Survey Grids to Substantiate Freedom from Exotic Pests*. In Proceeding of the 8th annual Forestry Inventory Analysis (FIA) Symposium. 16-19 Oct. 2006 Monterey, CA. USDA Forest Service GTR.

Susceptibility Potential is the sum of an equal weighted overlay of the Introduction Potential and Establishment Potential.

This one-kilometer resolution data is intended to be used to develop a detection strategy for monitoring *A. sulcicollis*.
http://www.fs.fed.us/foresthealth/technology/invasives_agrilussulcicollis.shtml



Albers Equal Area Conic Projection

Map produced by FHTET, IL
 Fort Collins, CO on 2-14-2011
 File: as_sample.mxd
 Project: *A. sulcicollis*

Summary of Survey Sample Areas for the Conterminous US
***Agrilus sulcicollis* (Lacordair): European Oak Borer; February 14, 2011**
Website URL: http://www.fs.fed.us/foresthealth/technology/invasives_agrilusulcicollis-riskmaps.shtml

This project incorporates methods developed by Coulston, et al. (2006) to develop national scale sampling areas based on the Forest Health Technology Enterprise Team (FHTET) *Agrilus sulcicollis* Susceptibility Surface.

National Scale Sample Methods:

- 1) reclassification of the susceptibility risk potential surface into four classes from the original five classes (0 - Little/No, 1 – Low, 2 – Medium, 3 – High) Table 1;
- 2) estimating the intensification factor based on the required number of samples and the relative certainty for each risk category; (Table 1)
- 3) intensifying EMAP’s North American hexagon to develop a systematic point grid for each risk stratum;
- 4) spatially intersecting the intensified point grids with the corresponding risk stratum;
- 5) merging each set of selected points from the stratum intersection;
- 6) creating the sample areas that are semi-regular tessellations of Thiessen polygons created from the merged grid intensification points.

For this project, the FHTET *Agrilus sulcicollis* susceptibility risk potential surface was used and reclassified into the required four classes. A total of 980 sample areas were used for the intensification model. Relative certainties were assigned in order to create increasing plot intensifications for increasing risk stratum. A custom Microsoft ©EXCEL application calculates the intensification factor and sequence number based on the number of points and desired relative certainty. The sequence for the point intensification is determined from a table supplied by the authors. Table 1 shows the risk class, area by class, and number of sample areas used for this project. The point grid intensification is based on the Environmental Monitoring and Assessment (EMAP) hexagon for the conterminous United States and is iteratively intensified using a custom ArcView 3.3 application. A new point file is created for each iterative intensification. The final intensification iterations for each class is intersected with a vector version of the susceptibility surface and merged to create a single point shape file. A sample area tessellation is then performed from the merged intensification points using a custom function in the ArcView 3.3 application that creates Thiessen polygons. These polygons become the sample areas, where the sample areas are based on the risk class. It is intended that each sample area is given the same number of sample plots.

References

Coulston, John W., Koch, F.H., Smith, W.D., Sapio, F.J. 2006. *Developing Survey Grids to Substantiate Freedom from Exotic Pests*. Proceedings of the Eight Annual Inventory and Analysis Symposium. http://www.forestthreats.org/publications/fhm/frank-koch/Developing_survey_grids_to_substantiate_freedom_from_exotic_pests.pdf

Table 1: Summary Statistics

Original Risk Class	Risk Class for Sampling	Relative Certainty	Area (km²)	Sample Frequency
NoData (0)	Little/No (0)	0.1	6,167,233	45
Low (1)	Low (1)	0.1	1,313,944	45
Moderate (2)	Moderate (2)	0.6	263,426	393
High (3) & Extreme (4)	High (3)	0.7	45,321	517
		Total	7,789,924	1,000

Point of Contact

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